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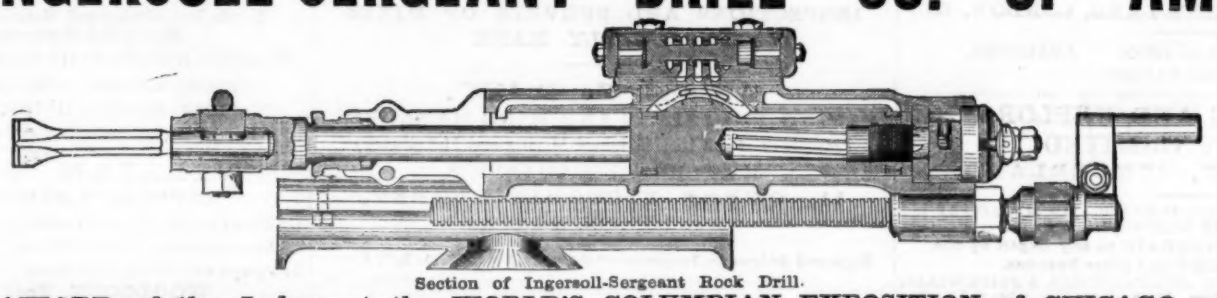

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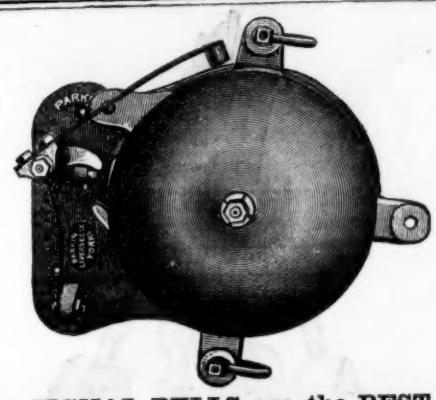

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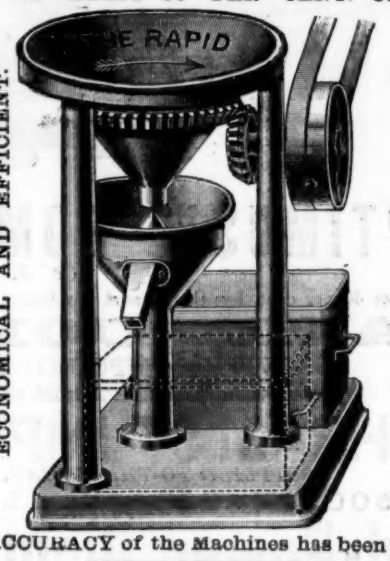


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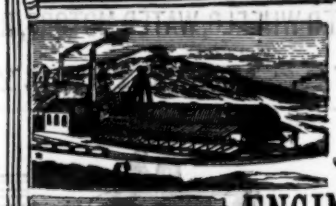
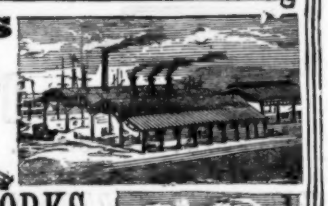
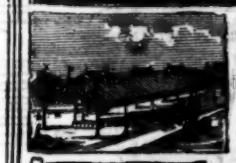


IRON ROOFS AND BUILDINGS FOR





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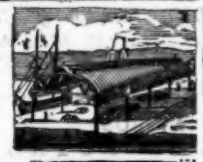

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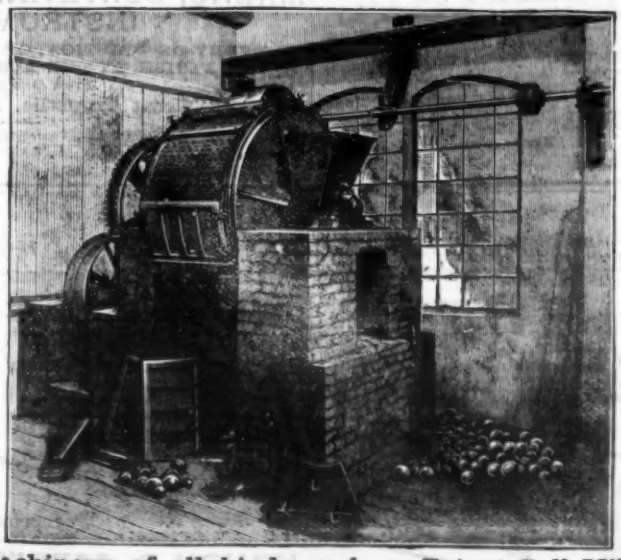

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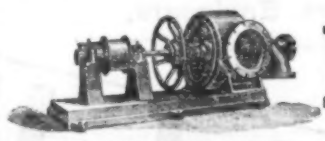

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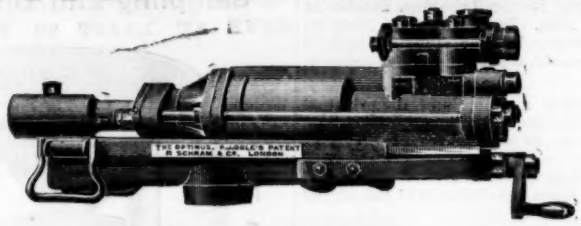

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Consumes 40 per cent. less Compressed Air than any other Drill at the same time giving the most effectual results.

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WITH COMPOUND AIR AND STEAM CYLINDERS,

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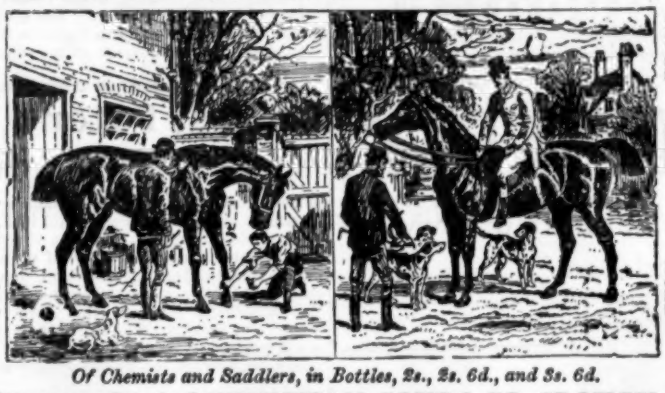

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"I find it invaluable for strains both in horse and hound."
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ESTABLISHED 1839

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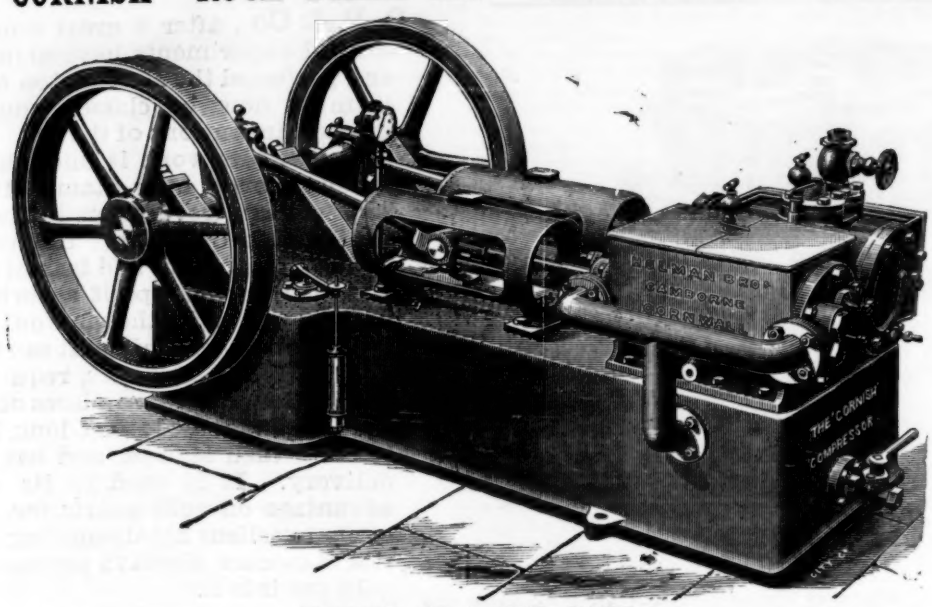


RECORD OF WORK DONE

At Botallack Mine, St. Just, Cornwall, **TWELVE MEN** with **TWO** new Patent **CORNISH ROCK DRILLS** drove, sunk, and rose **288 FATHOMS** in **12 MONTHS,** equal to five times the Speed of Hand Labour.

At Wheal Grenville Mine, Camborne, Cornwall, **SIX MEN** with **TWO** new Patent **CORNISH ROCK DRILLS** started from the **150 FATHOMS** level and put up in **EIGHT MONTHS** a **11 FEET** by **5 FEET PERPENDICULAR RISE 46 FATHOMS 5 FEET 6 INCHES,** and about midway drove **1 FATHOM 5 FT.** No communication of any kind was effected until holing to the Shaft brought down from surface.

Estimates for ROCK BORING PLANT and GENERAL MINING MACHINERY on Application.

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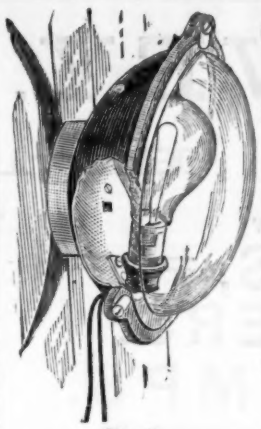

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**Highest Award at the Mining Exhibition, 1890.**

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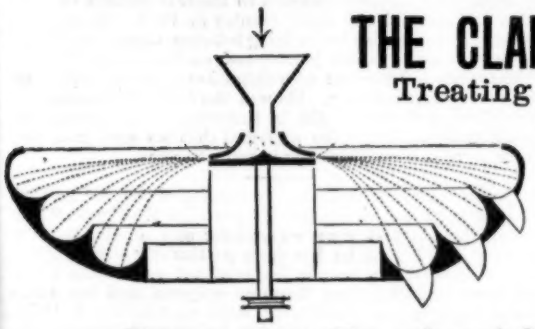

## THE CLARKSON-STANFIELD CONCENTRATOR (LIMITED), are successfully

Treating the ores of Gold, Silver, Copper, Lead, Tin, Zinc, Cobalt, &c., &c. of all degrees of fineness, from 30 to the finest meshes by their NEW MACHINERY which may be seen in operation at

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Homogeneous substances, such as Emery, Glass, Sand, Sulphur, Black Lead, &c., graded according to size in one operation.

## Terms for Experimental Concentration, and for Supply of Machines on Application.


## NEW PATENTS.

**LIST of APPLICATIONS for New Patents relating to Mining Metallurgical, Engineering, Railway and kindred matters, specially compiled from official sources for the "Mining Journal" by Messrs. Rayner and Company, Patent Agents, 37, Chancery Lane, London, W.C., who will forward all information regarding them free on application.**

1 Edward Thomas Cleathero, 16, Tollington Place, London.—Improvements in hydraulic lifts.—January 1.

10 Charles Guest Norris and George Henry Richmond, Charles Street Engineering Works, Manchester.—Improvements in apparatus for heating liquids and generating steam.—January 1.

48 Thomas Albert Crompton, 86, Leadenhall Street, London.—A boiler tube end protector and heating surface, flame and fire shield for boilers of every description.—January 1.

51 Samuel Quincey, 146, Seven Sisters Road, South Tottenham, London.—Improvements in rotary engines.—January 1.

64 Paul Doudart de la Grée, 45, Southampton Buildings, Chancery Lane, London.—Improvements in and relating to packings for stuffing boxes.—January 1.

75 George Newsum, Sunbridge Chambers, Bradford—Improvements in the construction of boilers suitable for hot water heating apparatus.—January 1.

84 John Smith Raworth, 46, Lincolns Inn Fields, London.—Improvements in reduction gearing for steam turbines.—January 2.

124 John Smith Raworth, 46, Lincolns Inn Fields, London.—Improvements in the construction of steam turbines.—January 2.

143 Robert Harry Grey, 47, Lincolns Inn Fields, London.—Improvements in or connected with pumping apparatus.—January 2.

188 James MacNeal Allen, 46, Lincolns Inn Fields, London.—Improvements in tubulous boilers.—January 3.

191 Nathaniel S. Keith, 24, Southampton Buildings, Chancery Lane, London.—Improvements in dynamos.—January 3.

217 Francis Price, Bristol Bank Buildings, Bristol.—An appliance for use either as a propeller, pump or motor.

232 James Shenton, 77, Colmore Road, Birmingham.—Improvements in the combustion chambers of puddling mill, chemical and other furnaces. January 4.

263 Ottocar Lindemann, 40, Chancery Lane, London.—Improvements in gas or petroleum motors.—January 4.

276 William Samuel Laycock, Bank Buildings, George Street, Sheffield.—Improvements in couplings for steam pipes.—January 5.

291 Julius Begtrup and James Henry McEwen, 52, Chancery Lane, London.—Improvements in steam engine governors.

297 William Steers, 47, Cursitor Street, Chancery Lane, London.—Improvements in fluid fuel injectors.—January 5.

305 Henry Percy Holt, 28, Southampton Buildings, Chancery Lane.—Improvements in driving gear for gas or oil motor cars.—January 5.

328 Joseph Tinn, Bristol Bank Buildings, Bristol.—An improvement relating to apparatus for galvanising sheet iron and steel.—January 6.

330 James Smith, 11, Brunton Terrace, Edinburgh.—Balanced side valve for steam engines.—January 6.

### SPECIFICATIONS PUBLISHED.

18,181, De Rierzkowski-Stewart, fluid pressure engines, 1892; 23,383, Holingrew, cylinders and valves of steam, &c., motors, 1892; 485, Roby and Bowden, lubricators, 1893; 1478, Lake, steam generators, 1893; 2657, Brook, furnaces, 1893.

The above specifications published may be had of Messrs. Rayner and Company 13, Chancery Lane, London, at 10d. each including postage.

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*The date given is that by which tenders must be delivered, in nearly all cases further information can be obtained on application at the addresses given. In applying for such the name of "The Mining Journal" should be mentioned as the original source of the information, concerning which further particulars are required.*

### HOME CONTRACTS.

**Tram Rails, January 12-20** (*Walton-on-Hill*).—For the supply of 10 tons of steel tram rails, neutral and movable points, to be delivered at Anfield or Walton-on-the-Hill Stations, Liverpool, for the Walton-on-the-Hill Local Board. Particulars of Mr. S. Middlebrook, Town Hall, Walton-on-the-Hill, Liverpool.

**Coal and Slack, January 22** (*Liverpool*).—For the supply of engine coal and slack delivered in such quantities as may be required at Preston-road Station on the Lancashire and Yorkshire Railway for ensuing six and twelve months for the West Derby Local Board. Tenders to be addressed to the Chairman of the Sewerage Farm Committee.

**Pitwood, January 23** (*London*).—For the supply of about 6000 tons of fir pitwood for colliery use, for the Great Western Railway Company. Specifications and forms of tender of the Stores Superintendent, Swindon, or the Secretary, Paddington Station.

**Pig Iron, January 23** (*London*).—For the supply of foundry pig-iron for the Great Western Railway Company. Particulars of the Secretary, Paddington Station.

**Galvanised Corrugated Sheets, January 24** (*London*).—For the supply and delivery of galvanised corrugated sheets for the East Indian Railway Company as per specifications to be seen at the company's offices. Tenders to be addressed to Mr. A. P. Dunstan, the secretary, Nicholas-lane, E.C.

**Station Additions, January 24** (*Blyth*).—For additions and improvements at Blyth, including the following works, for the North-Eastern Railway Company—viz., new goods warehouse and offices, stable and horse-keeper's house, extension of engine shed and coaling stage, signal cabin, agent's house, loading dock, &c. Particulars of Mr. William Bell, the company's architect, at the Central Station, Newcastle-on-Tyne.

**Widening Railway, January 24** (*Felling and Pelaw*).—For the widening of the Gateshead and Washington branch between Felling and Pelaw for the North-Eastern Railway Company. Particulars of Mr. Charles Harrison, Central Station, Newcastle-on-Tyne.

**Railway Construction, January 29** (*Brechin*).—For the construction of a line of railway about 5½ miles in length and station buildings for the Brechin and Edzell District Railway. Specifications and conditions of Messrs. Shiell and Don, solicitors, Brechin, N.B. Tenders to be addressed to Mr. W. Shelford, 35a, Great George-street, Westminster.

**Steel Girder Bridge, January 30** (*Glasgow*).—For the erection of a steel girder bridge over the River Conon in 14 spans with piers of cast iron screw piles, and also for a steel girder bridge over the River Orrin in three spans for the Mid-Ross District Committee. Drawings to be seen at the office of Messrs. Crouch and Hogg, C.E., 175, Hope-street, Glasgow. Tenders to be lodged with Mr. W. Mackenzie, clerk to the Mid-Ross District Committee, County Buildings, Dingwall.

**Pumping Machinery, February 5** (*Richmond, Surrey*).—For providing and erecting a new pumping engine and pumps at the Water Works, Riverside, Richmond, for the Town Council. Plans and specifications of Mr. W. G. Pierce, Borough Water Works, Riverside, Richmond. Tenders to be addressed to Mr. F. B. Senior, Town Hall, Richmond, Surrey.

**Sinking Pit,** (*Haywood-by-Auchengray, Scotland*).—For sinking pit at Haywood from the gas coal seam, to under coal seam. Particulars from the Manager.

**Shaft** (*Chorley*).—For sinking a shaft to the Mountain Mine at Chorley. Particulars of Mr. Rigby, Mining Engineer, King-street, Wigan.

**Colliery Stores,** (*Sunderland*).—For twelve months' supply of colliery stores for the Ryhope Colliery, near Sunderland. Forms of tender at the Colliery.

**Sinking Pits** (*Aberbeeg, Mon.*)—For the sinking of two pits near Aberbeeg, Monmouthshire, to the steam coal measures. For particulars apply to Messrs. John Lancaster and Co. (Limited), Blaina, Mon.

**Construction of Railway** (*Madrid*).—The Secretary of State for foreign affairs has received from Her Majesty's Ambassador at Madrid, a copy of a royal decree, inviting tenders for the construction of a railway from Manilla to Taal by Calamba and Batangas. The decree can be seen at the Foreign Office, S.W., on week-days between 11 and 6.


"AMONG THE MATABELE."—This is the title of an interesting book by the Rev. D. Carnegie, and published by the Religious Tract Society. The author went out to Hope Fountain, Matabeleland, in 1882, and spent the next ten years at that station of the London Missionary Society. Hope Fountain is only 12 miles from Bulawayo, the great kraal of Lobengula. This book could not make its appearance at a more opportune moment, for all eyesare directed towards the people with whose customs, modes of thought, and ways of life he is so intimately acquainted. Had it been published a year ago it would have attracted no notice beyond a limited circle, but now it will be found of absorbing interest to a more extended community. The book is written in choice and beautiful language, and contains, in addition to the portraits of Lobengula and Khama, pictures illustrating the life and manner of the people with whom the author deals.

DEAFNESS AND NOISES IN THE HEAD cured at the patient's home. This Illustrated Edition also treats on the cure of Catarrh, Bronchitis, Asthma, Extreme Stoutness, Indigestion, Dyspepsia, Rheumatism, by Medico-Electricity.—4d. G. R. BRIGHT, Publisher, 6, Tavistock Place, London, W.C.—[ADVT.]

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Telegraphic Address:

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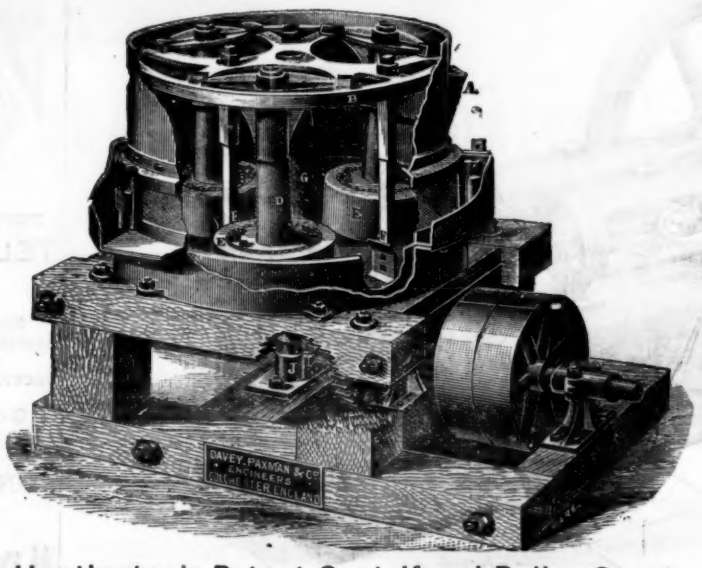



Huntington's Patent Centrifugal Roller Quartz Mill for fine pulverizing in Concentration.

LONDON OFFICE

78 [late 139], QUEEN VICTORIA STREET.

D. P. & Co., after a great number of careful experiments have so improved and perfected the Huntington Mill that it must now be classed among the greatest inventions of the age. The excellence of its work is undoubted, and its superiority over Stamp Mills will soon cause a revolution in its favour for Quartz Crushing. Its first cost, and cost for freight and transit is much less than for stamps, it absorbs about half the power for the same output, and is continually crushing. It can be fixed and started in 12 hours, requiring for foundations only two pieces of timber 12 in. by 12 in. by 14 feet long, is more reliable than stamps, and has perfect delivery. It is used to its greatest advantage on gold quartz, for, because of its excellent amalgamating properties, it catches about 75 per cent. of the gold put into it.

Full Particulars on Application to

**DAVEY, PAXMAN & Co.,**

**Colchester.**


# MECHANICAL ENGINEERING:

## MACHINERY, MINING and RAILWAY PLANT, &c.

Illustrated Descriptions of New and Standard Mechanical Appliances, Accessories and Processes, adapted to Mining, Metallurgical, Railway, Engineering and other Industrial Purposes.

## NEW FORM OF CAGE FOR AN INCLINED SHAFT.

A SOMEWHAT ingeniously devised form of cage for use in an inclined shaft is described in the *New York Engineering and Mining Journal*, and the one more particularly referred to sometime ago replaced the skip previously in use at the Original Mine, in Butte, Montana. The shaft in question is on an incline varying in general between 14° to 17° from the perpendicular, and is 4 feet wide in the clear. For years it had been worked with a skip, the cross-head being identical with the one shown on the cage. Two of the skip bodies were used, one always being in reserve, the repairs being considerable.

The minor disadvantages of a skip are, of course, as mining men know, by no means few, but as our contemporary points out chief among them is the difficulty of keeping properly spaced, the four points represented at each horizontal section by the two rails and guides. A considerable portion of the shaft at the Original Mine passed through stoped ground, and the continual settling produced frequent eccentricities of alignment, while this in turn made slow running imperative.

To obviate such troubles the cage was adopted. Larger guides 4 inches by 3 inches, shod with strap iron, were substituted for the 4 inches by 4 inches previously in use, and the safety jaws on the cage were cut out as shown, so as to close clear of the strap. Experience, however, has shown that the strap iron could be dispensed with and no serious lessening of the life of the guides result. Before this fact was appreciated, attempts were made to use a rubber tire on the wheels, but these were not at first successful, and no further experiments have been entered on, a plain, flat-faced wheel acting admirably.

Owing to the limited width of the shaft the fronts of the cars had to be altered a little to avoid grazing the timbers. This can be seen on the car in the background of the engraving. It had been apprehended that the variations in dip of the shaft would cause a shifting of the cars and become serious in the case of a heavy loaded car and at considerable speeds, but by using guards that fit snugly and even wedged on the sloping end, no trouble had been experienced, the maximum variations being 4° or 5° above or below the normal slope, to conform with which the cage was built.

The floors of the cage swings up, being hinged at the centre, and furnishes thus a trap door for lowering long timbers from the cage into the shaft, when shaft work of any kind, such as sinking or repairing is in progress. Apart from this the engraving probably calls for no explanation, unless it should be added that there are no wheels on the footwall side of the guides, plain iron shoes being sufficient; even these show but the slightest wear.

DRY CRUSHING FOR SAVING FINE GOLD.—In the arid mining districts of Australia machines for dry crushing auriferous ores ought to fulfil a useful purpose; and combined with an amalgamator requiring a minimum quantity of water, render otherwise unworkable properties a source of profit. In other centres where the drawback is not want of water, but the fineness of the gold, the system of dry crushing is well worth trying. There are many mines so located that the ordinary methods of gold saving are altogether inefficient, and consequently both capital and labour, and what is known to be rich ground, are idle. But conservation has a heavy grip of mining as of other industries. People are unwilling to desert the known for the less known; they look askance at innovations and cling to old established methods and ways. And so progression is the unknown quantity of mining. This is very lamentable, for it involves the whole country in a serious, though remediable, loss. In America, science and common sense go hand in hand in the solution of metallurgical problems; Australia seems content to wait to let those problems answer themselves by mere effluxion of time. West Australia, however, quickened by the daily increasing attention which is being bestowed upon her mineral resources, is making a departure from established customs, which is highly commendable. The Otis crusher, and the Reading and Rigby amalgamator, two machines as suitable for use in dry countries as for saving fine gold, are being adopted by some companies in preference to stamper batteries. The amalgamator, it is calculated, will save about 12,000 gallons of water per day; or 72,000 gallons per week. The results of this attempt to practically and economically grapple with natural difficulties will be awaited with interest. Company directors ought to make a special study of this question of dry crushing for saving fine gold. Week after week mine managers report that so many dwts. to the ton are going away in the tailings; and this escapement more frequently than not represents the difference between financial profit and loss. The fine gold instead of being saved, floats away over the battery tables, and with it the shareholders' prospect of dividends.—*Australian Mining Standard*.

## GOLD MINING IN ENGLAND.

### An American view of the subject.

AN article on this subject, from the pen of Mr. Edward Walker, appears in the *Engineering and Mining Journal* of New York, and will be read with some interest by those interested in the question. Mr. Walker says:—"There appears to be a prospect of a renewal of gold mining in England. It is a well known fact that quartz veins (gold bearing) exist in several portions of the British Islands, and are sufficiently rich to work if it were not for royalties to the Government and rent to the owners of the land. If these veins were in a new country like America or South Africa they could undoubtedly be worked at a profit, but the condition of things in the United Kingdom are such that all profit would be swamped by the landlord and the Crown. It is, therefore, worth mentioning that a syndicate is being formed to work a quartz reef in Devonshire, and that it is probable that people will be found to risk their money in so hazardous a venture. It may be interesting to our readers to give some detail of the property and of the proposed method of working.

"The property consists of about 60 acres, and is known as the Fernhill Estate. It is situated at Broadwoodwidyer, in the county of Devon, and is about 4 miles from Launceston. Under the licence granted by the landowner, the option of a 21 years' lease has been secured in exceptionally favourable terms, a rent of £5 per annum, merging into dues of 1-40th. The royalties payable to the Crown are very low, being only 1 per cent. on the gold and silver extracted. Quartz containing gold was accidentally found on the estate some time ago, and on systematic search being made three gold bearing veins were discovered. These are named the Main Reef, the Trunk Reef, and No. 3 Reef respectively. The Main Reef is about 6 feet thick, and assays showed 3 dwts. 12 grains of gold to the ton of excavated stuff. The Trunk reef as far as can be seen of it is about 2 feet wide, while No. 3 reef appears to be a very large mass of gold bearing matrix, but the extent of it has not yet been ascertained. The Main reef dips north about 40 degrees, and the Trunk reef and No. 3 dip north also, but are less inclined than the Main reef. As all the reefs are within 300 feet of each other, it is believed that they will unite in a short depth and so form one belt of gold bearing rock. Messrs. Johnson, Matthey and Co. and others have assayed the products of the mines and in every case have found gold, the reports varying from 2 dwts. to 7 dwts. to the ton. The lessees of the property propose to form a syndicate with £2000 nominal capital. Of this capital they will take £1000 in fully paid shares, and they are asking for the other £1000 which is to be spent in purchasing a mining plant and in doing development work. If the result of working is satisfactory and promises well, it is proposed to form a company which will provide sufficient capital to work the property on a large scale.

"The estimated weekly expenses are calculated as follows for an output of 96 tons. Manager, $9.60; amalgamator, $9·60; two labourers, $7·20; eight miners to raise 96 tons of quartz at 60c. per ton, $57·60; dues to landlord, $7·80; amalgamating 96 tons at 12c. per ton, $11·52; crushing quartz, $23·04; hire of engine, $4·80; retorting, $4·02; coal and oil, $16·80; office expenses and secretary, $6·42; total $158·40. The labour items in these estimates are all extremely low and are in great contrast to wages in the Western States. The services of an efficient mine manager and of a competent amalgamator have already been secured. On this basis it will be seen that a yield of something less than 2 dwts. per ton would pay expenses, provided they did not exceed the very low estimate given."

ACCORDING to advices received from Coquimbo, Chili, some rich veins of gold have been discovered near that place.

## PARS. ABOUT PEOPLE

### IN THE MINING, RAILWAY, ENGINEERING, FINANCIAL, AND INDUSTRIAL WORLDS.

MR. ARCHIBALD R. COLQUHOUN, a summary of whose address to the London Chamber of Commerce on Monday week appeared in our columns last week, comes of a good old Scottish stock, as so many gallant explorers have done before him. He is the son of Dr. Archibald Colquhoun, late H.E.I.C.S., of Edinburgh. Years ago he had already made his mark in the service of the Indian Government as an energetic and capable engineer. He has been frequently employed on political duty, and was attached to the Government of India Mission to Siam and the Shan country in 1879. He explored the South China border lands lying between Canton and Mandalay, and his more recent journeys of exploration in the East and his travels and term of administration in South Africa are fresh in everyone's memory. He was the first Administrator of Mashonaland, and as he is still in the prime of a vigorous and energetic manhood it may be expected that we shall hear very much more of him and his work in years to come.

By profession Mr. Colquhoun is a member of the Indian Civil Service, having been for the last 12 years in the Public Works Department. But it is as an explorer and administrator in newly-found lands that he has more particularly distinguished himself. He has been a more or less constant contributor to the Indian press on Indian and Burmese subjects, and his *Across Chryse* is regarded as a standard work on the South China border lands; while, as is well known, he has contributed to the literature of travels and discovery in several other directions.

By the way, our report of Mr. Colquhoun's address to the London Chamber of Commerce which appeared in our last issue was, our readers will remember, accompanied by a most excellent portrait of the intrepid traveller. Through an oversight we omitted to acknowledge our indebtedness to the courtesy of our esteemed contemporary *Commerce*—which is also the official organ of the London Chamber of Commerce—for the permission to reproduce the portrait from its columns, which was readily granted to us.

WITH reference to our paragraph last week referring to the return to England of Mr. Henry Middleton, Mr. Arthur L. Collins, F.G.S., late Geologist and Mining Engineer to the Government of Afghanistan, sends us a letter from 14 and 15, Broad-street-avenue, E.C., dated the 18th inst., which, in common fairness, we feel bound to publish.

MR. COLLINS says:—

Permit me to correct the statement which appeared in your last week's issue (on page 31) about my late assistant, Mr. Henry Middleton. Mr. Middleton is not, and never was, Chief Geologist and Mining Engineer to the Government of Afghanistan. Before proceeding to Kabul in this capacity early in 1892, I myself engaged Mr. Middleton at Redruth on May 1, 1892, as my assistant on the recommendation of a mutual friend. And he subsequently signed in London an agreement with the agent of H.H. The Amir to go to Kabul as "miner." In this capacity (or, rather, that of mining foreman or "captain") he acted in Afghanistan, teaching the men to bore and blast, &c.

Since my resignation in 1893, I am advised from Kabul that no new arrangement was made with him by H.H. The Amir. . . . I am sorry to have to give the paragraph so flat a contradiction, but as a somewhat similar statement was unsuccessfully put forward once before, and afterwards withdrawn, I cannot now let it pass in silence.

WE are afraid we must let Mr. Middleton and Mr. Collins settle their differences between them, but we should add that Mr. Collins has submitted his agreement with H.H. The Amir to us, and on perusing it we find it confirms his statements.

"THERE IS NOTHING NEW UNDER THE SUN" is a saying credited to a variety of illustrious authors, from the time of Solomon to the present day. It is a fact that many inventions looked upon as modern are of ancient origin. The telephone, which recently caused such a furore of excitement, was in ancient days a means by which the high priests worked upon the credulity of their disciples. The Pyramids of Egypt and other wonders prove that this generation has a great deal to learn. Holloway's Pills and Ointment, however, were not anticipated by our forefathers, and to-day they stand alone as the best cure the world possesses for all the ills that humanity is heir to.

# MEETINGS OF MINING COMPANIES.

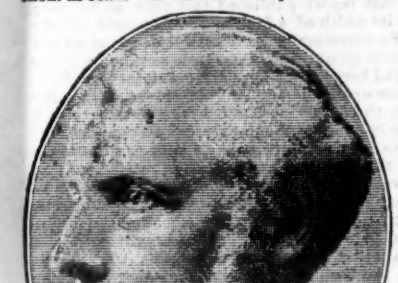
## THE CHAMPION REEF GOLD MINING COMPANY OF INDIA.

### A judiciously "severe" handling of accounts.—A brilliant outlook.

THE fifth ordinary general meeting, followed by an extraordinary general meeting, of the Champion Reef Gold Mining Company of India was held on Wednesday at the Cannon-street Hotel, under the presidency of Sir CHARLES TENNANT, Bart.

The SECRETARY (Mr. J. Garland) read the notice convening the meeting.

The CHAIRMAN said: Gentlemen, the report and accounts have been in your hands for some days, and I presume you will take them as read. In the accounts you will observe that gold has been produced during the past year of the value of £100,512 19s. 11d., on which royalty has been paid amounting to £4991 8s. 11d. The sale by tender of the 8355 Champion Reef shares, being the balance of capital unissued, resulted in a profit of £9351 19s. 2d., that sum representing the premium at which they were sold. The expenses which amount to a total sum of £81,134 1s. 10d., include some heavy payments of an exceptional nature, which will not recur; and comprise expenditure of every kind, capital and otherwise. Of the amount charged for machinery and goods shipped from England—namely, £14,928 8s. 9d., no less than £9968 is properly chargeable to capital account. The debenture interest, amounting to £3402, is an item which will not occur again. The payments for fuel during the year amounted to £20,289 2s., but this represents not only the fuel that was consumed, but the quantity remaining in stock at the end of the financial year, the stock being valued at £7149, so that the actual cost of the fuel consumed was about £13,000. Our fuel bill must necessarily be high, as you will no doubt realise when you are reminded of the large scale on which the operations of the company are being conducted. We are working no less than five distinct mines, requiring a large number of steam engines of all kinds; pumping and winding engines, engines for driving the rock drills, for the stamp mill, for underground haulage, for fitters' shop and saw mill, &c.; but we watch this question of fuel very closely, and you may rely upon the board using every economy that is consistent with the proper and expeditous opening up and working of your extensive property. The railway is now at work, which will materially reduce the cost of transit to the mines. Amongst the company's assets enumerated in the balance-sheet are 25,000 fully paid shares of the Coromandel Company. I am glad to be able to say that the prospects of that company's mine have very much improved during the past few weeks, and there is every probability of these shares becoming a very valuable asset before long. The profit realised during the year was £32,298 1s. 6d., and the profit and loss accounts show how this amount has been disposed of. You are aware that when last we met the company owed £49,250 on account of debenture debt. These debentures have all been paid off, but to enable this to be done a loan of £40,000 was obtained from our bankers. An immediate benefit was thus secured for the company by the reduction of interest from 10 to 5 per cent. This debt has since been reduced to £15,000, and the rate to £4 per cent. only, so that the company is not now subject to any onerous charge in the way of interest. The company's financial position is, therefore, satisfactory, and your directors see their way to paying an early dividend. This is referred to in the report, and we hope in about two months to be in a position to declare a first interim dividend out of the profits of the current year. The able and interesting report of our superintendent is very detailed, so that it is unnecessary for me to enlarge upon it. This will be done as usual by Mr. Taylor. I would call your attention, however, to the extraordinarily rapid development of our property, which, as you will see from the maps presented to you with the report, is now opened up for its entire length. The mine, however, is still very shallow, and may be considered in its infancy, as far as depth is concerned, with every prospect of a long and successful future before it. The report describes the operations which have been carried on at Dalyell's, Garland's, Ribblesdale's, Carmichael's, and Rowe's shafts, all of which have developed more or less large bodies of payable quartz. Dalyell's and Garland's shafts in particular have opened up very rich mines, and at Ribblesdale's in the 340 feet level a lode was driven upon for some distance of the phenomenal width (for the Colar gold field) of from 18 to 20 feet of good milling quartz. During the past year we stamped 19,165 tons of quartz, producing 26,560 ounces of gold, or an average of 1 ounce 7 dwts. 17 grains of gold to the ton. You will observe that no tailings have yet been treated, and these now amount to a large quantity and are daily increasing. Machinery has, however, been provided, and we are advised that its erection will be completed this month, so that I hope we shall be receiving some 300 ounces or 400 ounces a month from this source. Besides this, we have our new mill in course of erection; this we hope will be started in March next and will be capable of crushing 1000 tons a month more, from which we may expect about 1500 ounces monthly: thus in a short time we should be receiving an addition of 1800 ounces or 1900 ounces to our present return. The position of the mine is, however, improving so rapidly that your directors have thought it desirable to order a further battery of 20 heads of stamps, for which engine power is already provided. We have, therefore, given the order for this new battery, and are promised delivery in about two months. Allowing time for transport and erection, this machinery should be ready to work in July next. We shall then have stamping power sufficient to crush, say, 3400 tons of quartz per month, and our returns should, in due course, be practically double what they are now. A point of great importance in Captain Rowe's report is the reserves of quarts in the mine. These have been increased during the financial year by 29,000 tons, of the estimated value of say £160,000. The total quantity estimated to be in reserve at the end of September last was 45,000 tons, worth, approximately, about a quarter of a million sterling, and Captain Rowe in a recent letter informed us that the reserves are still being gradually increased. I think we may now congratulate ourselves that we have in the Champion Reef one of the best of the mines in the Colar Gold Fields—a mine which has been, and still is, being developed with extraordinary rapidity and great success, and in the words of the directors' report, "I think we may safely look forward to a very brilliant future for this company." Gentlemen, I have now the pleasure of reading to you the cable message which we have just received from our manager, Mr. Rowe, who has conducted our affairs with so much ability and energy:—



SIR CHARLES TENNANT, BART.

Cablegram from Captain James Rowe, dated January 16:—Dalyell's shaft: Lode 1 foot 7 inches wide assaying 1 ounce per ton. 530 feet level north lode 3 feet 6 inches wide assaying 1 ounce 10 dwts. per ton. Garland's shaft 530 feet level north lode 2 feet wide assaying 2 ounces 10 dwts. per ton. 440 feet level north lode 2 feet wide assaying 1 ounce 18 dwts. per ton. 350 feet level north lode 2 feet 6 inches wide assaying 2 ounces 10 dwts. per ton. No. 2 rise 240 feet north drive lode 3 feet 6 inches wide assaying 2 ounces 10 dwts. per ton. Ribblesdale's shaft 340 feet level south lode 9 inches wide assaying 1 ounce 1 dwt. per ton. Incline winze lode 3 feet wide assaying 2 ounces 10 dwts. per ton. 200 feet level north No. 2 rise lode 5 feet wide assaying 1 ounce 17 dwts. per ton. Rowe's shaft lode 1 foot 7 inches, assaying 2 ounces 10 dwts. per ton. The 15 stopes average 4 feet, assaying 1 ounce 18 dwts. Reserves increased 6000 tons.

You will see that our reserves now amount to 51,000 (45 by 6000) tons, and that our ore seems to be growing rather richer throughout. In conclusion, gentlemen, I look forward with confidence to paying you a substantial dividend for the current year, in addition to the wiping out the balance of our debt. I beg to move the adoption of the report.

Mr. WILLIAM GEORGE-PROBYN seconded the motion.

Mr. JOHN TAYLOR, who was received with applause, said it was his privilege to lay before the meeting a description of the works which had been carried on at the mines since the last meeting, he thought he might say with unfailing success. The exploratory works, as would be shown them by the very able report of Captain Rowe, had amounted in the year to not less than 6595 feet, all driven, it should be remembered, in the hard rock of the Colar gold field. Now, taking the workings in the order observed by Captain Rowe, at the very south end of the property, within 200 feet of the boundary, Dalyell's shaft was situated. From the printed report it would be seen that during the year the shaft had been sunk 185 feet, and the average of the reef for the whole of that distance was 1½ feet in width, and it assayed 1 ounce 8 dwts. of gold per ton. The shaft was 579 feet deep. Since then it had been sunk a further 60 feet, still in a good lode, from a foot and a-half to 3 feet wide, assaying from 14 dwts. up to over 2 ounces. South of Dalyell's shaft three levels were driven before September 30th up to the southern boundary—the 390 feet level, the 440 feet level, the 530 feet level—continuously in a productive reef in each case, not very wide in some places, but giving an average yield of 1½ ounces of gold per ton. Since September 30 another level had been driven 110 feet—the 620 feet level. There a reef had been discovered from 1 foot to 3 feet wide, assaying up to 1½ ounces, not so rich as above, but they would easily understand that because the rich payshoot at Dalyell's shaft was dipping to the north. North of Dalyell's shaft the 530 feet level had been driven for 85 feet from the shaft all through the year in a splendid run of rich ground, giving an average assay of 1 ounce 4 dwts. For the remainder of the way, however, up to Garland's shaft the average width was 6 feet, and its average assay 1 ounce 14 dwts. The continuance in depth of this fine payshoot had been proved by two winzes, both on the rich lode, one communicating with the 620 feet level, the other with the Garland's shaft. The 620 feet level north of Dalyell's shaft was going on under the rich ground, and he was sure those who had heard the telegram read would be pleased to notice that it stated the reef in the end to be 3 feet wide and worth 1½ ounce. Passing to the Garland shaft he had to tell them that at the time the report was written it was being sunk in the dyke; now it had got 50 feet below. North of the shaft they had been successful in finding the reef. They would remember that last year something was said of a large crosscourse which interfered with the workings to the north. Since then they had been successful in finding the reef upon the other side in three levels. It was very satisfactory to know that in the whole of the drivage north of the dyke, each of the levels had been in rich ground. The upper level of all—the 240—was driven north of Garland's 380 feet on the lode, which was from 2½ to 3½ feet wide. The level had been communicating with the one going south from Ribblesdale's shaft, making a communication underground throughout the whole of the property. The next level north of Garland's shaft—the 340 feet level—after a crosscut had been driven 60 feet to the westward intersected the lode and the level had since been driven a long way north of that point. For some distance—266 feet—the reef averaged 1 ounce 8 dwts. After that came a portion of unproductive ground of no great length and recently there had been a material improvement there. The lode had lately been 2 feet wide and worth 2½ ounces per ton. Just ahead of this level a winze had been sunk about 45 feet, also in the richilode—a lode 2 feet wide, worth over 2 ounces. So there was no doubt whatever as to the quality of the ground as they went further north. North of Garland's shaft came the 440 feet level, where the lode was found after driving some distance, and the printed report stated that the level had been driven 150 feet in a lode worth an ounce and a half. Since then a further 60 feet had been driven and the lode had been of even a higher value. The cablegrams stated that yesterday the lode was 2 feet wide and worth 1 ounce 18 dwts. The level was very well worth all the work which had gone before it. At the time the report was written the crosscut was being driven across the dyke, and after driving 89 feet the lode was cut. Since then the level had been continued for 87 feet, and in a rich lode all the way, assaying from 2 ounces to 2 ounces 18 dwts. The cable message which Sir Charles had read stated that it was now 2 feet wide and worth 2½ ounces. They would, therefore, see how very large an extent of rich ground was being opened out north of Garland's shaft. To go further north again Ribblesdale's shaft was sunk during the year 97 feet, and it was now down 444 feet. The reef in that shaft was narrow, and had given an average value of only 1½ ounces. That, however, was only what could be expected seeing that the lode was situated between the payshoots on which they were working. South of Ribblesdale's shaft the upper level—the 240 feet level—was driven during the year the remarkable distance of 651 feet. There they had a payshoot 360 feet in length with an average width of lode of 2½ feet, and an average value of somewhat over an ounce. If that were remembered in connection with the payshoot going north from Garland's shaft it would be seen what a large amount of productive ground they had the whole way. In the Ribblesdale's shaft the 340 feet level was driven south for 400 feet, and they had recently had a very considerable improvement which was to be anticipated as they were now meeting the payshoot. The cabled message told them that the lode was 9 inches wide and worth 1 ounce 1 dwt. The bottom level in Ribblesdale's shaft had been driven south 159 feet. They hoped very soon to meet with the payshoot of which he had spoken. North of Ribblesdale's shaft they had got a very remarkable development, and one which he could not attempt to explain to the meeting — one of those remarkable folds which they knew something — in fact, a good deal of in the Mysore Mine further to the south, and these folds had brought with them large deposits of ore in the neighbouring ground and was doing so in their case. The 340 level north of Ribblesdale's was driven 255 feet during the year, and altogether it was now 375 feet long. For some little distance—about 80 feet—the lode was small and then it improved, and for the remainder of the distance varied from 6 inches up to 5 feet with an average value of 1 ounce 8 dwts. At 375 feet from the shaft the fold of which he had spoken was met with, and here the pay rock was very wide. The same level had been driven back upon it in a south-easterly direction to a distance of 66 feet, and there the reef was 20 feet wide, and apparently of good quality of quartz. Above the 340 feet level the rise had been carried up where the lode was very wide, the part carried up yielding 2 ounces to the ton. Below the 340 feet level what was described in the fortnightly report as an incline winze had been carried down on the top of this rich deposit. According to the last report—that was of course since September 30—it was down to 123 feet in a very fine rich lode all the way, varying from 2 feet to 5 feet in width, an average of 2 ounces of gold throughout. The cable message stated that in the bottom the lode was 3 feet in width, and worth 2 ounces. In Rowe's shaft—which was called after their good superintendent at the mines—they had come upon a very decided change for the better since September 30. The shaft had been sunk 36 feet below the 225 feet level, and all the way on a productive reef, from 1 foot to 2 feet wide, with assays up to 3 ounces. The last report stated that it was 1 foot 9 inches wide with a value of 2 ounces 17 dwts. The cabled message stated it to be 1 ounce 7 dwts., the quarts being worth 2½ ounces. So they might be sure that the improvement had been maintained up to the day before the meeting, and there seemed to him to be ground for hoping they were opening up another independent payshoot north of the cross-cut to be seen on the plan. They must all, he thought, have been struck with the distance through which the levels had been extended into the rich ground, and he would especially invite attention to the extremely limited amount of stoping, as it was called, which had been done, relatively to the development. It was quite apparent in looking at the plan and bearing in mind the description which had been given of all of the numerous places which were being opened up that very little had been done in removing the quartz which had been developed. The development which had been carried out since the last meeting had undoubtedly increased very largely the value of the property, and had established the company's operations on a very secure and satisfactory basis. The development in several places had undoubtedly been of great importance in opening up unusually rich ground. The opening up at Dalyell's of a further large quantity of rich ground, to which he had alluded, the meeting with the lode upon the west side of the dyke in the level north of Garland's, and the discovery of a rich mass of quartz between Garland's and Carmichael's shafts were all important additions to the prospects of the company. There had also been an addition of no less than 29,000 tons to the reserves up to September 30th last, since when the quantity had been still further supplemented. The course to take in the future seemed perfectly clear—add considerably to the stamping power, double the output of quartz and the returns of gold would, he ventured to say, enable them to pay very handsome dividends indeed before many months were over. (Cheers.)

General WILKINSON asked if it were proposed to drive any galleries in the mine at shallower levels.

Mr. J. TAYLOR replied that this had been done already; but that the results being always very uncertain, owing to the existence of ancient workings, it was thought better not to lay any stress upon that part of the company's operations.

The resolution was then put and carried unanimously.

The retiring directors having been re-elected, and the auditors re-appointed, the meeting terminated with a hearty vote of thanks to the Chairman and directors, proposed by General WILKINSON, who dwelt at length upon the prosperous condition of the company's affairs, and the satisfactory outlook for the future.

The meeting then became special for the purpose of passing the following resolution which was agreed to without dissent:—

That the Articles of Association be altered in manner following:—In Article 77 the word "and" in the first and ninth lines thereof shall be omitted, and the words "and Edgar Taylor" shall be inserted therein immediately after the words "Robert Taylor" in the said first and ninth lines.

## THE CHIAPAS MINING COMPANY, LIMITED.

### Working at a profit.—Projected development in depth.

The fifth ordinary general meeting, followed by an extraordinary general meeting, of the Chiapas Mining Company (Limited) was held on Tuesday at the Hall, Broad-street Avenue, the chair being occupied by Mr. E. A. PONTIFEX.

The SECRETARY (Mr. H. A. Hedley) read the notice convening the meeting.

The CHAIRMAN said: Gentlemen, at the date of our annual general meeting of last year we had arrived at the point when we had been able to overcome the great, and, as had been thought by some, almost insuperable difficulties of obtaining a sufficient water supply for motive power, and of arranging for the transport of our ore from the mine to the river and thence to the sea coast, and we had just commenced to deal with the difficulties arising out of the peculiar composition and structure of the rock in which our mineral is found. I think I have told you on previous occasions that the character of this rock is quite unique in mining. It is, I believe, the only instance known of rock of this composition—wollastonite as it is called by mineralogists—existing in any large quantity as a matrix of ore. We had then only worked the mill seven months. That time, however, had been sufficient to show the ore required very peculiar and special treatment. The containing rock, instead of breaking up into an amorphous or granular powder, breaks up into spicular or needle-shaped crystals, which are very difficult to deal with, as they could not pass through the sizing screens with the same facility that other rock does. This difficulty we are now attempting to overcome by the use of water separators, or sizers, instead of sizing screens. A further difficulty has been experienced owing to the closeness of specific gravity between the copper mineral and a heavy garnet which is associated with it. This difficulty is being overcome by the use of a larger proportionate quantity of dressing machinery than is usually required. At that time two additional jigs had just been completed, and, although they appeared to be doing better work and increasing our output, they had not been sufficiently long at work to enable us to speak confidently as to the exact amount of benefit to be derived from them. Our experience with them, however, had been sufficient to justify us in continuing our efforts in the same direction, and we, therefore, sent out in May last a further eight jigs, which arrived at the mine in time to be erected and at work by the middle of September. The result has been that, whereas during the seven months I have spoken of we produced 190½ tons of concentrates, or an average of a little over 27 tons a month, we have, since September last, been producing a monthly average of about 68 tons. Although we were thus able to treat a larger quantity of ore and to increase our output, the percentage of gold, silver, and copper, which went away in the tailings, was still far too high. The best mode of dealing with this very peculiar material, as to which no previous experience existed, became, therefore, a matter of very careful study with us; and Mr. William Frecheville, who, as I informed you last year, had at our request been deputed by his firm to visit the mine and look into this and every other matter connected with our enterprise, after a prolonged stay at the mine of nearly six weeks, deemed it advisable to send a considerable quantity of the tailings to the testing works in St. Louis, in the United States, there to be tried by the various processes current in that country, to ascertain which of them was most suitable to deal with the material, so as to obtain, at not too great a cost, the largest extraction with the least loss of the mineral contents. The result of Mr. Frecheville's examination and of our study of his recommendations was that we determined to comply with them, and we ordered from Messrs. Fraser and Chalmers a 10-stamp mill, made in sections, so as to be capable of transport over the difficult and hilly country, together with amalgamation plates, and three Evan's tables. It is thought that stamps will better break up these needle-shaped crystals than any form of crushing and grinding which can be practically adopted. This additional machinery was shipped from here in October last, but it is somewhat hazardous to say how long it will take to transport it over this difficult country. Probably, however, we may look to its being at work some time during the present half of this year. I come now to the mining work. The principal development work done during the year has been the driving of the Taylor tunnel and its branches. This tunnel is 30 feet below the level of the Santa Fé stope, and appears to be opening up considerable bodies of ore. The Santa Fé stope has been carried into the hill a total distance of 160 feet by 40 feet high, and it is from 10 to 22 feet wide. This stope has practically supplied all the ore obtained during the year under review. Since its termination we have been getting large quantities from the Taylor tunnel and its branches. The ore cut in the Taylor tunnel, which is, as I have stated, below the level of the Santa Fé stope, appears to extend more or less continuously over a width of 185 feet, and it has been proved for a distance of 400 feet in length. This ore assays from 18 dwts. to 1 ounce of gold per ton, besides its silver and copper contents. In saying that this shoot of ore extends more or less continuously over a width of 180 feet, I should explain that its general run is in a north and south direction, and that the extreme distance east and west between the points where ore is being worked is the distance stated; that is about 180 feet. This width is made up of streaks of ore alternating with other streaks of unproductive rock, and the

Santa Fé stope appears to be a prolongation of one of these streaks of ore. We hope that the other streaks when opened out may prove equally productive. This ore yields between 4 and 5 per cent. of concentrates in the mill, and we hope to obtain a considerably larger proportion when the new machinery for treating the tailings is at work. Hitherto the opening up and extraction of ore in the mine has been confined to surface levels, none of them being yet driven below water level. They have so far been extraordinarily productive, and doubtless will remain so for some time yet. But to make this a really large and, so to speak, permanently productive mine, it must be developed in depth, and this will necessitate the erection of hoisting and pumping machinery, and the sooner this is put in hand the better for our future prospects. It will probably entail an additional outlay of from £5000 to £10,000, which, as we stand at present, we shall have to provide out of our profits as we make them, and which we doubtless shall be able to provide in that way. It will, however, be for you to decide whether or no you think it desirable to supply some further portion of the capital originally created in order that it should be applied to this purpose, or whether you would prefer that this capital outlay should be provided out of what would otherwise go on to you in the shape of dividends. We are now producing about 1400 tons of tailings a month, from which mineral of the value of £1 a ton can, we think, be extracted, and taking 10s. per ton as the cost of treatment—and this ought to be an ample allowance—it would leave a clear profit of 10s. a ton, or £700 a month, over and above anything we may get by our present appliances. The 10-stamp mill and appliances which we are sending out for treating the tailings, will only be able to deal with about 20 tons a day, say 600 tons a month, leaving 800 to 1000 tons of tailings per month that we shall not be able to treat until we have more machinery. We have, further, an accumulated stock of from 8000 to 10,000 tons of tailings, which our present machinery is also inadequate to deal with, and which will be a further source of profit as soon as it can be economically treated. Manifestly, therefore, this further outlay would be abundantly remunerative; but I wish strongly to impress upon you that in suggesting this work we are not contemplating any increased expenditure whatever, or any issue of further capital over and above what was originally contemplated. The amount of capital originally created was £252,500, of which £222,982 has been subscribed, leaving a balance of £29,518 unissued. Some misapprehension appears to have been entertained at the last general meeting by one or two of our shareholders, who appeared to think that the preference capital, for which we then intimated we should probably invite further subscription, was over and above the capital originally contemplated. This, I repeat, is a mistake. We attached a preference to the unissued capital in order to facilitate subscription to it, but the amount of this preference capital was included in and was not in excess of the original £252,500. In point of fact, we do not consider that even now we shall want the whole of the amount of the balance of capital; probably £10,000 further would do all that we suggest should be done, and I think I have shown that, if it is subscribed, you will find it to be a very profitable investment, but it can be dispensed with if you are willing that the profits, which we are now assuredly making, shall be retained for the purposes of being expended upon capital account, instead of going into your pockets as dividends. In concluding, gentlemen, I would congratulate you upon the proof which we have now abundantly obtained of the great value of your property, and upon our having successfully dealt with the manifold difficulties attaching to its position. We have now the means of obtaining sufficient water power, we have obtained increased facilities for our timber supply, we have made very substantial progress in educating the native resident population as miners and artisans, we have erected commodious dwellings for them, and we have got over the very difficult question of transport. To have done all this in a comparatively short time, considering the nature of the country and its distance from here, is a matter of satisfaction to your directors. I beg to move that, "The report and accounts presented to the shareholders be received and adopted."

Mr. J. W. SKELTON seconded the motion.

A SHAREHOLDER enquired whether the interest upon the preference shares had been paid this year.

The CHAIRMAN said it was provided that the interest upon the preference shares should only be paid out of profits. The rate was 10 per cent., and the interest was cumulative.

The motion was then put and carried unanimously, and the retiring director, Mr. C. G. Hall, and the auditors, Messrs. Monkhouse, Goddard, and Co., were re-elected.

### AN EXTRAORDINARY MEETING.

The CHAIRMAN, in explaining the object of the extraordinary general meeting which followed, said it was for the purpose of making an alteration in the Articles of Association, in order that the statement of income and expenditure, submitted annually to the general meeting of the company should be made up to the six months before the date of the meeting and not to within three months, as provided at present. The accounts of the company were, he said, made up generally to September 30th, and after that the accounts of the mine had to be written up and the stocks taken. After that the accounts had to be sent to England, and to be incorporated in the books. The result was that the accounts could not be finished before the Christmas holidays, and it was almost impossible, having any regard to accuracy, to present the directors' report and the statement of accounts within the time legally prescribed. On that account they asked them to eliminate the word "three," and insert the word "six" as the number of months mentioned in the Articles, and that having been done, they also proposed that the last words—"from the time of the last preceding" should be struck out as meaningless. The question would also shortly be put to the shareholders as to whether the money which was required to enlarge the company's means of trade should be raised in the form of fresh capital or should be paid for out of revenue.

A SHAREHOLDER thought it would be much more desirable to go on meeting the charges necessary for developing the operations out of the revenue, as at present. Once the directors began raising fresh capital there would be no end to it.

The CHAIRMAN pointed out that it was not proposed to increase the capital beyond the amount originally intended. The directors were quite willing to work as at present if the shareholders so wished. The Chairman concluded by calling upon Mr. W. Frecheville, one of the directors who had recently visited the mine, to give some details of the works proceeding there.

Mr. WILLIAM FRECHEVILLE said he thought some details about the mine would probably be of interest to the shareholders. They had all heard about the cliff where the outcrop of ore was situated. It was a cliff about 175 feet high, and in the bottom of it there was the outcrop of the ore going up to a height of about forty feet. That had been gone into with a long stope about 200 feet in length, and the ore had kept at a depth of from 10 to 20 feet and sometimes more. The ore went down straight from the beginning of this stope to the end of the cliff, and the body of ore which was called the Santa Fé body was to be seen entering the Providencia ground. This formed a body about 400 feet long tapering in the Providencia ground to a point and running beyond the end of the stope. This was quite a good sized body in itself, and capable of producing wealth if it continued in depth, as there was every reason to believe it would. A cross cut had been put in over the Taylor tunnel, and after causing disappointment for a long time, cut the ore. Notwithstanding that it was a difficult matter to see the connection between the Santa Fé ore body and this ore body, it certainly looked as if it were part of it. In continuing the Taylor tunnel another ore body was cut, so that at present in this particular part of the mine they were working on three ore bodies, the quality of which was pretty good, running from ½ an ounce of gold up to an ounce or a little over. The average was close upon an ounce. The value of all the gold, silver, and copper calculated in gold was about an ounce and a half. The great point for present consideration was the opening out of the mine in depth. Very little sinking—in fact hardly any sinking at all had been done up to the present. The ore was going down straight, and they must either use the profits or have fresh capital raised to put up adequate hoisting and pumping machinery, and increase the crushing plant so as to be able to treat more of the tailings. They were producing about 60 tons of tailings a day, and the 10 stamps now working were only capable of treating 20 tons a day, so that there was a surplus of 40 tons a day they had no means of treating.

Mr. CHARLES G. HALL asked whether Mr. Frecheville had formed an opinion as to whether the ore body from the Santa Fé stope to the Taylor tunnel would not be egg-shaped, and whether on that account there would not be large deposits of ore beneath.

Mr. FRECHEVILLE said it was impossible to say. If the ore body were egg-shaped they were at present only upon the apex of it. It was a very difficult thing to say how the ore would turn out in depth as sufficient development had not yet been done.

The CHAIRMAN then put the motion for the adoption of the proposed alteration in the Articles of Association, which was carried unanimously.

The meeting terminated with the usual vote of thanks to the Chairman.

## THE GOLD FIELDS OF MYSORE, LIMITED.

### Discovery of a rich lode.—Bright outlook for the future.

The seventh ordinary general meeting of the Gold Fields of Mysore (Limited), was held on Wednesday at the Cannon-street Hotel, under the presidency of Lord RIBBLESDALE.

The SECRETARY (Mr. John Garland) read the notice convening the meeting.

The CHAIRMAN said: Gentlemen, I am sorry the board is not able to present to you this year such a brilliant report as it has done on previous occasions. The simple reason of that is not that your property has grown any worse, but because no sales have been effected, and, of course, the profits of a land company like the Gold Fields of Mysore depend upon the sales of land. The directors have never thought it good policy in any way to force the sales, because we know that, sooner or later, the demand for our land must come. Although I can point to no direct profits in pounds, shillings, and pence, I can point to an indirect profit from causes which are efficient and inexpensive. There is a tremendous process of betterment always at work and always affecting the property of the Gold Fields of Mysore; in fact, every rich assay of quartz from the neighbouring mines and every favourable development are surely at work upon the large portion of the land which we still own, and which we know contains gold bearing quartz. The accounts show that during the year we have made a net profit of £391, which, added to the balance brought forward last year, gives us a sum to the credit of profit and loss account of £2121 6s. 9d. Mention is made in the report of a subscription for shares in the Kempinkote Gold Field (Limited). This is a company which was formed in June last to work a property situated in the province of Mysore, about 150 miles west of the Colar Gold Field. This property has always had a very great reputation as a rich gold mining district, and when I was out at Colar myself I heard almost fabulous reports of its wealth. I went so far at that time as to have a survey made by an expert, who reported so favourably upon it that I was quite encouraged to secure an option in favour of the Gold Fields of Mysore. At that time, however, we could not come to terms, and the option fell through. Later on things altered, and the parties interested in the property came to an agreement. The late Captain Plummer, as you know, was a man of large ideas where the gold mining industry is concerned; but his ideas could stand the test of practice, and it will, therefore, be interesting for you to hear what Captain Plummer said in his report on the property. He said: "Its favoured situation, its immense works, its reputed wealth, the uniformly-auriferous character of its quartz and schist, and the expressed opinion of men holding first rank in Indian mining, point to Kempinkote as one of the most promising fields for mining enterprise in Southern India." During the formation of the Kempinkote Company overtures were made to the Gold Fields of Mysore to subscribe for a portion of its capital, and this matter received the careful consideration of the directors. Your board came to the conclusion—and I believe a perfectly right and sound conclusion—that it is the duty of the Gold Fields of Mysore to widen its area so as to include as much gold mining land as possible. You know, gentlemen, that we are not a mining company altogether. We have rights to mine, but one of the great objects of this company, which is clearly stated in the Articles of Association, is that it is also a land purchasing company. As there may be some misapprehension on this point, I will take leave to read the Article to which I am referring. It says: "To take, by subscription, purchase, or otherwise, and hold shares, stock, debentures, or any other interest in any other company in which the liability of the members is limited, having objects altogether, or in part, similar to those of this company." I believe it would be difficult to drive a coach and horses through that article. The board considered that an interest in the Kempinkote property was desirable, and entered into negotiations. The result is that the board, on behalf of the company, subscribed for 100,000 shares of 5s. each in the Kempinkote Company, in consideration of receiving from the vendors of that company 30,000 fully-paid shares as commission. These shares, which, I have said, are of 5s. each, were issued with 2s. per share credited, leaving a total liability, therefore, of 3s. per share. The amount called up, up to the present, is 1s. per share, leaving a liability of 2s. per share. We have great hopes that this investment will prove to be a remunerative one for the company. You will observe from the balance-sheet that the company holds 2000 shares in the Mysore Gold Mining Company and 2000 shares in the Ooregum Company. We also hold 10,000 fully-paid shares in the Balaghat-Mysore Company and 8115 fully-paid shares in the Nine Reefs Gold Mining Company. Besides that, we have 10,478 shares in the Coromandel Company—whose property, by the way, I may say has greatly improved of late—and 233 shares, partly paid, of the Mysore new issue. Our liabilities, you will observe from the balance-sheet, are comparatively trifling; so that the company's financial position is exceedingly good. As to the mining and prospecting work during the past year, Mr. John Taylor will, no doubt, give you full details. I will remark, however, that the mining operations in the Golconda block, on the Oriental lode, have been very successful, and we have no doubt that we have there a very valuable mine. The prospecting work also has resulted in the discovery of two or three valuable lodes, and we hope in due time to be able to sell these blocks, which show every prospect of becoming valuable mines. In regard to the Golconda block, in which is situated the south shaft, the directors are at the present time considering a scheme for the formation of a company to work and develop this important property. I may say that our ideas are in the cut and dried form which printing gives to ideas; but, of course, the matter depends as much on the shareholders as on the board; in fact, more. We shall not go on trying to form a new company unless we get some direct encouragement from the shareholders. The directors have been under the impression for some time that something should be done with this Golconda property, and their impression has been strengthened by the last news from the mine, and I will now read you the telegram dated January 16, 1894, from Captain James Rowe. He says: "South Shaft: 470 feet level north: Lode 3 feet wide, assaying 1 ounce 5 dwts. per ton. 470 feet level south: Lode 1 foot 7 inches wide, assaying 1 ounce 1 dwt. per ton. 380 feet level north: Lode 1 foot wide, assaying 2 ounces 5 dwts. per ton. 380 feet level south: Lode 3 feet, wide, assaying 1 ounce 8 dwts. per ton. Prospecting: No. 2 shaft, West Balaghat, north drive, lode 1 foot 7 inches wide, assaying 1 ounce 12 dwts. per ton. South Drive lode 6 inches wide, assaying 2 ounces 5 dwts. per ton. No. 3 shaft lode 1 foot 7 inches wide assaying 1 ounce 9 dwts. per ton. No. 4 shaft, Road Block, lode 1 foot 7 inches wide assaying 1 ounce 4 dwts. per ton." That I consider a slashing good telegram, and it comes from a successful man like Captain Rowe, who is doing such wonders at Champion Reef. There is another matter which is mentioned in the report, and that is the option which the directors have seen fit to give to the South-East Mysore Company to purchase the Yerraconda Block, which lies to the south of the Colar gold field. The terms of option are as follow:—In consideration of that company spending £3000 on the development of the reef, the Gold Fields Company gives it the option of purchasing the sub-lease of the property on its handing over to the Gold Fields Company 50,000 fully paid shares of the South-East Mysore Company, these shares being the created but unissued capital of that company. The issue of these shares would bring up the capital to 200,000 in number, of which the Gold Fields Company would be the holders of one-fourth. The prospecting and mining work carried out by the South-East Mysore Company on the Yerraconda block has been very successful, and there is no doubt but what that company will exercise its option of purchasing this ground from us. It is sinking two shafts—one called the Beresford and the other the Pigott. Pigott's shaft is being sunk vertically, and the manager of the South-East Mysore Company hopes to meet with the lode at the depth of about 150 feet. Of this 108 feet has already been sunk, and it is expected that the remainder will be accomplished in about two months from this date. In Beresford's shaft the company is sinking on the lode which was described by the manager in his last report published this week as follows:—"The lode maintains its width of 4 feet, and is composed chiefly of dark blue quartz. We occasionally see beautiful stones of quartz studded with gold." Some quartz which has been sent home to the directors has been assayed here in London during the last few days, and gave a result of close upon 4 ounces of gold to the ton. We may, I think, look upon the 50,000 shares I have referred to as a most valuable asset. In conclusion, I can only express my unabated confidence in the future of the company, and I wish to express the thanks of the board to the managers and staff for the efficient way in which they have served us. I now beg to move the adoption of the report and accounts.

Major-General G. DE LA POER BERESFORD seconded the resolution, saying the Oriental lode was developing into a really good lode.

Mr. JOHN TAYLOR said that the work at the south shaft had proceeded steadily during the past year, and the reef there had continued to open up well, showing as they got deeper a very marked improvement upon the levels above. The south shaft had been sunk during the year 130 feet all the way on a good pay shoot. The reef varied from 2½ feet to 4 feet in width and the average given was 1 ounce 3 dwts. Occasionally it was very much richer, the quartz on one occasion being worth upwards of 3 ounces to the ton. According to the printed report, the 330 feet level—which he dealt rather fully with at the previous meeting—was driven south of the shaft 85 feet, where the reef varied from 1½ to 3½ feet in width, the assays being from 3 dwts. to over 2 ounces. Since September it had been driven a further 38 feet, where the reef was somewhat wider, and the lowest assay ¾ of an ounce—the continuation of a very profitable pay shoot. The cable message received by the Chairman stated that the reef was now 3 feet wide, and worth 1 ounce 3 dwts. The 380 feet level was driven north during the year ending in September 127 feet, where the lode was richer, giving an assay of from 4 dwts. to over 2 ounces. Since then the level had been driven a further 28 feet in a reef from 6 inches to 1½ feet wide and with assays from a little over ½ ounce to nearly 3 ounces. By the cable message it would be seen that the reef was a foot wide at the end and worth 2½ ounces. The bottom level—the 470—which had only recently been commenced had now been driven 27 feet, where the reef had been from 1 foot to 2 feet wide and worth from 13 up to 18 dwts. According to the cable message it was now worth 1 ounce 1 dwt., showing, as he had already said, a material improvement in the value. In the upper level—the 280—of which he spoke last year they had nice patches of ground through which the reef was cut, but the general average for the 320 feet which was driven was only 2 dwts. of gold to the ton which, as they were aware was not a sufficient amount to make it possible to work it profitably. But he remembered telling them on a former occasion that though the ground itself was not rich, it was of such a nature as to make them confident that an improvement would take place at a greater depth. That had now been amply proved in the 380 feet level, the average of the quartz being now something over ¾ ounces. These facts spoke very well for the future of the mine in depth, and it appeared to him it was a mine certainly worth being taken in hand much more vigorously, and with further prospecting he thought it would turn out as well as other mines they knew of upon the field. Most of the report was taken up with a description of the prospecting work, and it would be seen that in several places, widely scattered over the property, reefs had been discovered of very considerable promise. On the Oriental Block the No. 25 shaft had been sunk 87 feet, and the lode in the bottom was 2 feet wide with an average assay of 14 dwts. Captain Rowe regarded this as a most promising lode. Again, in the Golconda Block in which the south shaft was situated, the No. 11 shaft was sunk 80 feet, the reef being 16 inches wide, averaging close upon ½ ounce to the ton. The No. 18 shaft was sunk to a depth of 113 feet, and at one place the lode was 14 inches wide and worth close upon 2 ounces to the ton. There appeared to be gold upon the reefs in the Golconda Block wherever prospecting works had been carried on to any depth. In the West Balaghat Block in the No. 2 shaft the old workings had been followed down for 72 feet, and below these levels had been driven a short distance, which proved the reef to be about 15 inches wide, assaying 1 ounce 7 dwts. to the ton. The cable message just received stated that the reef in the northern level was 1 foot 7 inches wide assaying 1 ounce 12 dwts., and in the southern level 6 inches wide, worth 2½ ounces to the ton. To all appearances they were opening up a nice little mine here. All these were very shallow workings, but, in view of the results they had obtained in the south shaft and in the deeper explorations on other parts of the field, he thought they would be warranted in incurring further expenditure. Captain Rowe had expressed the opinion that when opened up in the deeper levels the several points referred to would be found to be remunerative. As regard to the different mines in which the company held shares, it was unnecessary to say anything about the Mysore and Ooregum Companies, because they all knew that they were returning large profits. Although the Balaghat Company had had great difficulties to contend with, the most recent accounts from the property were decidedly more favourable, and had great hopes of the discovery of the Champion Reef on what was called Tennant's shaft, to the west of the original mine. While it was perfectly true that no development of any importance had taken place in connection with the Nine Reefs Mine, the most recent advices gave them great encouragement. The 300 feet level showed a certain increase in the width of the vein, which he hoped might lead to something. The superintendent was very much encouraged by the cutting of the Champion Reef in the Balaghat Company's property, and he had commenced to sink a new shaft near the southern boundary of the Nine Reefs Company. He (the speaker) thought the Kempinkote Company had commenced its career with the very brightest prospects. These old workings were huge in size, and every mining engineer who had visited that place had come away deeply impressed with the vastness of the ancient workings, and with the very highest opinion of the probable results of reopening them. In addition the Kempinkote Company owned a large tract of land to the southern end of the Colar gold field, very nearly adjoining the place at which the South-East Mysore was developing such a rich reef. The Coromandel Company's mines had shown a very decided improvement during the last few weeks, and he certainly thought the outlook was very much brighter than it was at the time of the general meeting, five weeks ago. In respect to the South-East Mysore Company, he thought it was reasonable to anticipate that the option which had been spoken of might be of very great value. The explorations carried on in the new ground recently acquired by that company had been most successful. In Beresford's shaft the reef was said to have all the characteristics of the Champion Reef, and was certainly both

wide and rich, and worthy of the best mines upon the Colar gold field. Mr. Taylor concluded by saying that while the company had lately not been able to carry out much business and attain large profits he felt satisfied that the large property in the goldfields was developing satisfactorily, and that the position of the different mines in which they held shares was also a very prosperous one. (Applause.)

A SHAREHOLDER expressed surprise at the magnitude of the directors' fees. He could understand that such a sum as a thousand pounds should be paid to them when the company had come upon such a rich lode as the Coromandel lode; but at present the prospects of the company did not appear to be very brilliant, and he thought a sum of £500 would be quite enough to pay the directors, more especially considering that Messrs. J. and R. Taylor did all the work in connection with managing the mines.

The CHAIRMAN understood the speaker's contention to be that because but little profit had been made during the year, the directors should have their fees reduced. He might, however, remind the meeting that two years ago there was a profit of £236,502, and he did not remember that upon that occasion there was any expression of opinion that the Articles of Association should be revised and the directors fees increased.

A SHAREHOLDER enquired whether the directors were paid a fixed sum or so much *per capita*.

The CHAIRMAN: A fixed sum to be divided amongst them.

Mr. DYER asked to be furnished with some additional information as to the terms upon which the company held its property.

The CHAIRMAN said that when he was in India certain of the mining companies had been scheduled as such after having been inspected by the engineer attached to the Mysore Government. The Gold Fields of Mysore were, on the contrary, ruled to be a land company, though the Government did admit that under certain conditions they would grant an extension of the lease. Those conditions had not as yet been complied with, but he had no doubt that in the event of any future companies being formed in connection with the Gold Fields of Mysore their claims would be equitably dealt with by the Government.

The motion for the adoption of the report was then put and carried unanimously.

The retiring directors, Major-General Beresford and Mr. J. Taylor, having been re-elected, and the auditors reappointed, the meeting terminated with a hearty vote of thanks to the Chairman.

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Subsequently an extraordinary general meeting was held, when the following resolution was passed:—

That the Articles of Association be altered in manner following:—In Article 77 the word "and" in the first and ninth lines thereof shall be omitted, and the words "and Edgar Taylor" shall be inserted therein immediately after the words "Robert Taylor" in the said first and ninth lines.

## THE BRITISH BROKEN HILL PROPRIETARY COMPANY, LIMITED.

### A new start, with new directors.

An extraordinary general meeting of the British Broken Hill Proprietary Company (Limited) was held on Thursday at Winchester House, for the purpose of revising the Articles of Association, of considering the resignation of the board of directors, and of electing others in their place.

The chair was occupied by Mr. JAMES MACANDREW.

The SECRETARY (Mr. Douglas Petre) read the notice convening the meeting.

The CHAIRMAN said: Gentlemen,—This is the last occasion upon which the old board will present itself to the shareholders, as their functions both in London and Melbourne terminate at the close of this meeting. Before touching upon the question of the successors to the board, I must make some reference to the resolutions altering the Articles of Association, which have been circulated with the notice of the meeting, and which it will be my duty presently to move. Those alterations are not the propositions of the board, but they emanated from the Adelaide committee of shareholders, who sent Mr. Woodhead as their representative to London. He had legal advice both in London and in Adelaide as to the proper shape into which he was to put the ideas of the committee. Those ideas have been subjected to a very careful revision at the hands of the solicitors to the company, and the result is the resolutions which you see in the printed notice. Although, however, those resolutions do not come from the directors, they are very cordially accepted by those directors—(hear, hear)—because they recognise that it is only just and reasonable the colonial shareholders should have their proper influence in the direction of the affairs of the company. The constitution of the company requires that in all matters demanding the intervention of the shareholders the final decision shall rest with the London proprietors, but these alterations will give greater facilities to the colonial shareholders for bringing their views upon any important policy before the half-yearly meetings in London in order that they may meet with discussion there. Upon that account I hope the proposals will meet with unanimous assent. (Applause.) The resolutions which are to follow and which will be moved from the body of the room will propose the names of three gentlemen to form nucleus of the new board. Of course the board intend to take no part in the election of their successors, but I am sure they will very cordially welcome the gentlemen whose names have been put before you, two of whom have had colonial experience. I cannot conceal from myself that these gentlemen are undertaking an arduous and difficult task, and one of their chief embarrassments will be to justify in principle and to realise in practice the somewhat over-sanguine and, as I think, injudicious expectations which had been raised in the minds of the shareholders by what has been stated by Mr. Woodhead in his public addresses and in his circulars. I should like to say one word with reference to the colonial directors, who are naturally somewhat hurt at the attitude displayed towards them at the last meeting of shareholders. It is only due to them that I should read to you the few words of farewell which they have sent to us over the secretary's signature. They are as follows:—"The members of the colonial board, in sending in their resignations, desire me to say they regret exceedingly that the shareholders should have seen fit to pass the resolution which they did. That the mine is so bare as to be unprofitable is hardly their fault, and they point out that the policy of smelting and adding machinery to the plant was against their judgment and advice. That the connection of individual members of the board with other companies was inimical to the interests of the British Broken Hill Proprietary Company they do not admit, and they feel that throughout they have always endeavoured to further the interest of this company to the very best of their ability." That is all I shall say upon the subject. The gentlemen who are now coming forward to undertake this task certainly merit your thanks for doing so. We have not been able to make a success of the company, because, as we say, circumstances have been too unfavourable for us. I hope, however, that you will believe I am expressing my feelings when I say I heartily wish to the new directors a very much greater measure of success. The interests of the company are to be regarded as far before any individual disappointments which directors may feel in this matter, and if those gentlemen are able by better management to restore the value of your shares and to give you some return for the investments you have made and the years you have waited, no one will be more rejoiced than myself. Notice has also been given that Mr. Woodhead will be proposed as a colonial director. His election is a matter entirely for the meeting to determine; but I would lay stress upon the consideration that if he is elected he should be fittingly elected by the shareholders in the colony. He came to this company especially proclaiming the advice that the views of the colonial shareholders were neglected and ignored here by the management and by the shareholders, and it seems to me therefore it would be better to leave them to judge of his pretensions and to elect him, if they think fit, to a seat upon the board. I avail myself of this opportunity of informing you that our latest telegram from the mine intimates that there is no particular change in its yield or working. Exploration has been very actively proceeded with during the past year in a good many different directions, substantially with the same result. We have met with rich lead ore, but it is, as before, poor in silver. There was one crosscut in the mine near a shaft recently cut which led us to entertain some hopes, the assays being very much more favourable than we have been accustomed to for a long time. Unfortunately, the quantity of ore raised from this particular locality was so unimportant that it merely helped to raise the average of our weekly yield a little, and at the present time the vein shows no signs of increasing, either in size or in richness. The accounts for the past half-year cannot of course be laid before you for a considerable time to come. They are now being prepared in Melbourne, but from the few figures that have been telegraphed to us I think we may take it that our financial position on September 31 is very much the same as it was on June 30. We have been able to keep our heads above the water, and that is, I think, as much as we can do until more prosperous times come round. The Chairman concluded by moving the resolution on the paper embodying certain modifications in detail in the Articles of Association.

Mr. THOMAS PYKE seconded these resolutions, and they were unanimously carried.

The CHAIRMAN reminded the meeting that the gentlemen nominated as directors were Messrs. H. Brandon, C. Parbury, E. Russell Roberts and W. H. Woodhead.

Mr. J. E. DRAKE referred to a circular distributed among the shareholders, recommending that a positive assurance should be elicited from the new directors that they would sever all connection with the Broken Hill Proprietary Company (Limited), both as to mining management boards, secretary and offices, which, he said, carried his own views.

Mr. HATFIELD CRIBB feared that unless the company were separated from the mother company they would be swallowed up by it.

Mr. RUSSELL ROBERTS said he could not give any definite pledge before taking office. He could only promise to do his best in the interests of the company.

Mr. PARBURY expressed the same view.

After some further discussion the four gentlemen whose names were before the meeting were elected as directors, and the meeting terminated with a vote of thanks to the Chairman and directors.

## THE FLAGSTAFF COMPANY, LIMITED.

### Professor Vincent upon the position of the company and his own connection with it.

An extraordinary general meeting of the shareholders of the Flagstaff Company (Limited) was held on Tuesday at Winchester House, under the presidency of Mr. GEORGE HOPKINS, C.E., for the purpose of hearing a statement from Professor Vincent, who has recently returned from the mines, as to the operations carried out by him during the past six months, and as to the present condition of the property.

The ACTING SECRETARY (Mr. G. T. Verney) read the notice convening the meeting.

The CHAIRMAN said: Gentlemen, this extraordinary general meeting has been called for the purpose set forth in the notice which you have just heard read. At the two meetings which we had a short time since, when the shareholders resolved to reconstruct the company, Professor Vincent, as you know, was away at the mine, and some remarks were made, which the Professor looks upon as rather severe comments on his action, and upon his professional position. Seeing that at that meeting several shareholders expressed regret that Professor Vincent was not present so that he might have answered in person the questions which they desired to put to him, and hear the views they had formed as to the position of the company, and seeing also that the Professor himself was equally anxious to have been present, the directors thought that by calling this meeting they would be meeting the wishes of all parties. You will be anxious, I am sure, to hear Professor Vincent's report as to what he has done at the mine during the past six months, and also what are the present prospects and position of the mine. I have only to ask you kindly to give the Professor a patient hearing, and at the conclusion of his speech I shall be glad to hear any remarks which the shareholders may please to make.

Professor VINCENT, at the outset of a speech which occupied about an hour in delivery, said he had little doubt that anything he might have to say concerning the company, even if it took the form of a retrospect, which might be of importance as showing that the mine had in times past been a large producer and dividend-payer, would be of considerable interest to shareholders who might not have been long connected with it. He was afraid of occupying too much of the valuable time of the meeting if he were to attempt to do justice to his own connection with the mine, which had been of so long a duration. However, he would run over as rapidly as possible the events in the history of the mine, and in so doing it might be of interest to the shareholders that he should commence as far back as its discovery.

Mr. SMEDLEY rose to a point of order and invited the Chairman to confine the speaker to the object of the meeting. (Hear, hear.) Speaking for himself he had no wish to go over again the events connected with the mine in their chronological order.

The CHAIRMAN said there was no doubt that the honourable proprietors objection was right in principle; but he was sure he would be the last to prevent Professor Vincent from making any remarks he might wish to make, in answer to what had been said of him when he was not present, and, therefore, had no opportunity of reply. Perhaps Professor Vincent would speak first of what had been done during the past six months, and if, afterwards, he might wish in the course of his speech to go back a few years, the shareholders would undoubtedly raise no objection to his doing so.

Professor VINCENT, continuing, said he had no objection to observing the order which had been suggested to him by the Chairman, though perhaps it might appear to be putting the cart before the horse. He might remind the shareholders that he arrived at the mine upon June 1st last. Before he left London his colleagues expressed the anxious wish that he should devote himself to getting the ore down from the mine and effecting a sale of it. In that object he most heartily concurred; the more readily because some of the shareholders had expressed a doubt whether there was any ore in the mine at all. Being satisfied that a cross cut 310 feet long was stored full of ore he was himself as anxious as anybody to get it down and to realise it. The road was opened about June 17, and he managed to get down 65 tons of ore within 48 hours after the tramway was started running. A small breakage at the sampling works caused a delay of a day and a half, and that period brought them within the limits of that fearful time of silver depression when it was almost impossible to get any return for the ore. He might point out to the meeting that he had a larger interest in the ore than anybody else, as he had 100 per cent. more shares in the company than any other living man, and everything which was possible to convert the ore into cash he certainly did. As he was prevented from selling the ore he cast about for some other way of continuing operations, and at a time when all the neighbouring mines were being shut down, he was able, being well known to the principal bankers and business men in Salt Lake City, to go on working without asking for any money from home. In that way he continued for six months without paying a dollar to anybody, a thing never before attempted in Utah or elsewhere, even by anybody. Seeing it was no use trying to dispose of the ore upon any decent terms, he cast about him to find how to use his time to the best advantage. The shaft which he had proposed before leaving London to retimber and renovate to some slight extent, soon began to manifest more weakness than he had suspected. It proved to be in a very dangerous condition. No less an authority than Captain Stevens had before spoken to him on the utter impossibility of constructing it at all, and had said, "You are attempting to build a shaft through the air. You have neither top nor bottom, and you can never do it." However, he did build it and the shaft had since been in seven years' constant and valuable use. On the recent occasion he did the same thing again, merely through understanding the physical conditions with which he had to deal. Under ordinary circumstances a practical miner would have rightly spoken of it as an impossibility. Despite this, the shaft had been renewed through its most dangerous portion, and he might say that to do this he had had to deal with three separate captains from July 1st to the end of November. Two of them simply threw up their positions, saying the thing was a man-trap and that they would not work in it if the mine were given them. He, himself was injured by the falling rock, and was so crippled it was impossible for him to have written to his colleagues as he could have wished, and he remained struggling, as perhaps no man ever before had struggled, to give value, as it were, to the small shareholding of one man who had at the last meeting of the company spoken in an acrimonious manner of him (the speaker.) While engaged in putting up the more dangerous portions of the shaft, all the labour possible was employed, but when some few men could be spared they were sent down to the seventh level to explore several points which were the most promising, with the result that, in almost every instance, good ore was found. Having paused to point out upon the maps the places where development was proceeding, the Professor continued that the Vallejo Tunnel (belonging to the adjoining mine) which had been lately used as an access to the Flagstaff, had commenced disintegrating, so that the sooner the shaft was completed the better. At the present moment there were 10 men at work upon it with the object of getting it into a good condition as soon as possible. With regard to the ore points in the 7th level the advices state that one man in two days had taken out of that level a ton and a half of first class ore. That, he supposed, would represent from £7 to £10 per ton. The ore in that level showed a great improvement, the gold going as high as £4 4s., and the silver increasing. The state of the mineralisation of a portion of the 7th level was decidedly encouraging. Perhaps he might be allowed to give some particulars as to the past history of the mine, because it was hardly possible that information respecting a mine which had paid so many dividends in the past could be otherwise than acceptable. The first year after the registration of the company which took place in November, 1870, he was commissioned to report upon the mine, and on February 1, 1871, such was the confidence aroused in him by what he saw at the Flagstaff Mine in October, 1871, when he first reported on it, that he was satisfied for the first time in his life to go on working without £1 of working capital. The Flagstaff had paid dividends regularly every month from February 1, 1871, till about the middle of 1874. No dividend was less than 2 per cent. For the first year they made £72,000, in the second year they made £87,000, and in the third year £94,000. A serious mistake had been made when it was asserted that the 37 dividends that had been made by the working of the Flagstaff Mine went into the pockets of American proprietors, and that no one but Americans had got a penny out of the company in the way of dividends. Anyone could easily satisfy himself that that statement was not true by simply seeing the records in Somerset House. The fact was that no American ever received a cent from the Flagstaff Company.

Mr. SMEDLEY: Have you got any ore down this year?

Professor VINCENT: Yes; 65 tons. The speaker then passed on to justify his faith in the mine by the fact that it had distributed 37 consecutive monthly dividends. In the later workings the lode had become much larger, and it required one with special knowledge of the physical phenomena of the mine in order to deal with it successfully. He himself had been familiarising himself with the property for more than 20 years, and he had convinced himself that there was an immense amount of wealth yet to come from the Flagstaff Mine, and had shown his *bona fides* by investing £28,000 in the company, and he was now ready to subscribe for 5000 more share. Besides the Flagstaff he had been connected with various other mines, in which Englishmen were interested. He might specify the "Quebrada" the "Cortez" and "Tilt Cove," all English companies, with good standing in London, and all producing largely. He had had the honor of making the original reports on all of these mines.

Mr. TAFE said he wished to ask how long it would be before the shaft was in such a condition that ores could be obtained from the seventh level.

Professor VINCENT replied that it was very difficult to say, but he hoped by June 1 the second, third, fourth, fifth, and sixth levels would be in a condition for working. He might, however, state that below the third level there was no ground which was at all dangerous. At the last two meetings of their company Mr. Tafe had made certain observations in his absence, with regard to himself, that he would like to refer to. Mr. Tafe had said that he (Professor Vincent) should have nothing whatever to do with the reconstruction, and that he was a man of such impressiveness and such persuasiveness that he influenced the directors unduly. This he altogether denied. There was an impression abroad that he had made a lot of money out of the Flagstaff, but it was not true. He had invariably put the money they had paid him into shares of the company, and those shares he held that day. In fact, he had done all in his power in the interests of the shareholders. In conclusion, he might state that his hope and belief was that the board would only require them to pay up, under the reconstruction scheme, about the second 3d., because the ore was increasing in silver and in lead, and very materially in gold, and he hoped, after the explanation he had given, that the shareholders who had not come into the reconstruction scheme would do so; but if they did not he should be very glad to be allowed to take his portion of the shares remaining unappropriated.

The CHAIRMAN thought that Professor Vincent had not made one or two points very clear. He might say that timbering had been carried out down to the first 100 foot level, and the men were now at work between the 100 and the 200 foot levels, and large pieces of rock had fallen there, carrying with them pieces of timber to the bottom of the shaft and blocking it up. What was the extent of the damage that had been done no one knew. All that was known was that large pieces of timber had been carried away. There were no timbers at all, he understood, below the fourth level. There it was all hard rock, which would stand without any timbers. Professor Vincent had already mentioned that he had put new timbers over the hoisting works, and also in the passage way connecting the hoisting works to the shaft. He should expect himself that it would take six months at least to get the shaft finished. The other outlet to the mine was through the Vallejo tunnel. Large quantities of rock had fallen down there also, and the place was not a very safe one to work in. He was himself very anxious to see the proper inlet into the mine put into good order, so that it might be cleared of the ore accumulated there, and of the quantity of which it was very difficult to form an estimate. Developments might then be pushed on in several places which, he understood, were now looking very hopeful.

Professor VINCENT said he might remark that below the sixth level there were 326 feet sunk, and there was probably a good deal of rubbish at the bottom of the shaft. Personally he was very hopeful that the mine would shortly get into a paying position again.

Mr. TAFE apprehended that the meeting was of somewhat an irregular nature. The directors had called the shareholders together in the generous desire to give Professor Vincent an opportunity of explaining matters to them. Speaking for himself he was not in favour, as he had declared on previous occasions, of continuing the sole management in the hands of Professor Vincent.

The motion for according a hearty vote of thanks to the Chairman and directors proposed by Mr. Tafe was put and carried unanimously.

The CHAIRMAN thanked the meeting for the vote of thanks which had been passed. Perhaps the meeting had been a little irregular, but the directors thought it might, under the circumstances, be overlooked. As far as was possible, he was always for throwing oil on the troubled waters. The Flagstaff had in the past paid very large dividends, and Professor Vincent had naturally felt hurt because it had been said or implied that those dividends were paid during the time he was unconnected with the mine. Such was not the case. When those large dividends were paid Professor Vincent was certainly connected with the management though to what

extent he did not know. (Professor VINCENT: I had the entire management.) The shaft had lately been put down to a considerable depth and long levels had been run and there was no doubt that at the present time the position of the company was more hopeful. For that reason he had advised the shareholders to reconstruct to see if the Flagstaff could not again be made to pay. The trouble now was that it was somewhat difficult to get access to the property. The shaft, which was the proper access had fallen in, and the only other way was through the Vallejo tunnel which belonged to their neighbours, and was in some respects not safe. According to the reports which had been received there was a large quantity of ore still in the mine; how much it was well-nigh impossible to estimate. With a view of arriving at some idea of its value it was desirable that the shaft should be put into order as quickly as possible so that the ore might be got out. After that works of development might be undertaken at several promising points, and although the ore was not quite so rich in depth as in the upper levels it might improve as they got down lower; in fact it was now improving in the seventh level.

The proceedings then terminated.

## EAST POOL.

### Dividend of 4s. per share.—The price of tin.—Captain Bishop's speech.—The "lord's" coming of age.

(SPECIALLY REPORTED FOR *The Mining Journal*.)

Shareholders in East Pool held a twelve weekly meeting on the mine on Monday, Mr. JOHN R. BRANWELL, J.P., Chairman of the committee, presiding.

The PURSER (Mr. J. Mayne) read the accounts, which showed that the labour costs had been £7084 1s. 6d.; merchants' bills, £2289 3s. 7d.; contribution to Wheal Agar water charges, £75; Illogan parish rates, £236 6s.; Stannary assessment, £11 18s. 1d.; dues, one-fourth of profit, £405 2s. 2d.; making a total of £10,101 11s. 4d. On the other side, 23 tons 7 cwts. 9 qrs. 19 lbs. of tin ores had been sold for £9643 5s. 4d., an average price of £40 12s. 2d. per ton: copper ore realised £467 11s. 6d.; arsenic, £1091 16s. 11d.; by carriage, £14 6s. 5d.; discounts, £82 9s.; income tax off dues and rent, £16 4s. 10d.; Carn Brea adventurers, £72 0s. 8d.; sundries, £1 3s. 9d.; leaving a profit on the three months of £1287 7s. 1d. (Applause.)

The CHAIRMAN, in moving the adoption of the accounts, said they showed a profit of £1287 against £1614 at the last account. The tin sold during the quarter was less by 4 tons 10 cwts., and amount received was £658 less; the average price being £40 12s. against £42 11s. 4d. The quantity of tinstuff sent to the stamps was 12,608 tons against 13,094, showing a falling off of 485 tons, and the produce was 42 lbs. to the ton against £41 for the previous quarter. The tribute average was 47 lbs. to the ton, against 46½. They had received for arsenic £1091, and nothing for wolfram. The decreased receipts for tin were more than enough to account for the falling off in the profit, and he, therefore, thought the shareholders would agree with him that a certain amount of economy must have been exercised. However, the fact remained that there was £1287 to divide, and the recommendation of the committee was that there should be a dividend of 4s. per share, absorbing £1280 and carrying forward £7 7s. 1d. to reserve. (Applause.) With regard to the future, he made it a rule never to prophecy unless he knew, and on that occasion he was bound to admit that he did not know. He did not know whether they would get a better price for tin; it had been slipping away continuously for the past 12 months, and how much further it was going to slip it was impossible to say. We had been accustomed to refer to the price of silver as explanatory of the present state of things. Our neighbours on the other side of the water had now seen their folly in having paid too high a price for the metal, and the English Government had interfered with the price of the Indian rupee, but what was going to be the ultimate result of these measures he did not know. With regard to the metal trade generally, smelters said they were not making their fortunes, and the producers knew they were not making theirs. It struck him the other day that the Chancellor of the Exchequer was the only one who was doing well out of the trade. He was buying silver at about 32d. per ounce, and selling it at about 58d.—a profit of something like 80 or 90 per cent., which was calculated to make the mouths of people in the metal trade water. (Hear, hear.)

Mr. WOOLCOCK seconded, remarking that the dividend would be the smallest declared at East Pool for 14 years. If the price of tin remained where it was, or went still further back, he scarcely knew where any dividend at all was to come from. They had that day a credit for copper in excess of what they often had; indeed they had not earned the dividend from tin at all, but from copper and arsenic. He hoped the arsenic would maintain its present price, and also the copper. The latter ore not only realised a little money itself, but when stamped it yielded a little arsenic also.

The accounts were passed, and a dividend of 4s. per share was declared.

Captain BISHOP read the following report of the agents (Captains Chas. F. Bishop, John Penhale, Samuel Curtis, and Jno. Bishop):—

North Lode: At the 280 fathom level we have intersected the lode, and driven or same some fathoms; it is 5 feet wide and worth £12 per fathom. This end is being driven by a boring machine. The 265 fathom level west of crosscut the lode in this end at present is poor; it is producing low quality tin stuff, but not much to value. The 252 fathom level west of cross cut is being driven by a boring machine, and is worth £15 per fathom. The 240 fathom level west of cross cut is worth £15 per fathom. We have just commenced to rise in this level with a boring machine. The rise is worth £12 per fathom.—Stopes on Great and North Lodes: Two at the 252 fathom level worth £18 per fathom. One at the 240 fathom level worth £18 per fathom. One at the 160 fathom level worth £12 per fathom. One for tin and copper at the 140 fathom level worth £30 per fathom.—Stopes on Middle Lode: Two at the 212 fathom level worth £14 per fathom. One at the 200 fathom level worth £12 per fathom.—South Lodes: The 180 fathom level east is worth £11 per fathom. The 160 fathom level west worth £9 per fathom. The rise in the 170 fathom level is worth £12 per fathom. The 70 fathom level west is worth £9 per fathom. The rise in the 90 fathom level is worth £14 per fathom. This rise is being put up by a boring machine.—Stopes on South Lodes: One at the 200 fathom level worth £11 per fathom. One at the 190 fathom level worth £14 per fathom. One at the 180 fathom level worth £12 per fathom. Two at the 170 fathom level worth £12 per fathom. One at the 150 fathom level worth £15 per fathom. Two at the 60 fathom level worth £13 per fathom.—Michell's shaft: This shaft is cut down full size 17 fathoms below the 180 fathom level.—Tributes: We have 21 pitches working by 72 men. Average tributes 7s. 6d. in the £.

In supplementing the report Captain BISHOP said: Perhaps I ought not to be called a pessimist, yet I do not know whether I am deserving of the name of an optimist, but I do not take such a gloomy view of the situation as men generally take. It is true we have a low price for our tin, but we have done exceedingly well with that low price, and I think we should be thankful that we are so well off as we are. Since the last meeting we have intersected the north lode at the 280, and so far have driven 7 fathoms on it. The full value is just about as stated in the report—£12 per fathom. We are, it must be borne in mind, valuing all these bargains at the present low price of tin. The lode in the 265 is put down as poor. It has not been so all the quarter, but at the present moment it is rather squeezed. We have hopes, however, that this end will improve as we get further west. At the present moment it is worth about 16 lbs. of tin to the ton. The 252 extending westward, though not of high value, is going through ground that can be taken away at a profit. This north lode made more productive as we got below the 228. That level is not driven many fathoms to the west of the cross cut, and as we sunk a winze below the 228 the lode was replenished by several droppers which came in on it some fathoms below the 228. Now we have extended the 240 something like 30 fathoms ahead of the point for the purpose of putting up a rise there to test the nature of that ground rather than go and drive the level, which is poor for the moment, to the 228. If we meet a productive lode there we can bring on the level towards it. Other parts of the mine are just as described in the report. We are putting up a rise—a new bargain—at the 90. Our object is to open up a piece of lode there which is of rather ordinary value for tin, but produces low quality copper, and a good bit of arsenic. We have a fairly good credit for arsenic to-day, and we have now to look out for arsenical ground as well as that which is productive for tin. We are rather economical in our mode of working. Some people were "touching us up" a bit after the last account. I believe they thought there were some bills behind the scenes, but we had not. The bills this time are less than they were last, and I believe every penny piece is charged. We try, as far as possible, to accommodate ourselves to circumstances. (Applause.)

The CHAIRMAN said that the time had come when all who were interested in the mining industry should pull together, whether they were lords, shareholders, or workers in the mines. Before they met again young Mr. Basset, the lord of East Pool would have come of age, and he thought they, as shareholders, should take some notice of the event. He would therefore propose the following resolution:—"That the committee and adventurers desire to convey to Arthur Francis Basset, Esq., their congratulations on his having attained his majority, coupled with the hope that he may live a long, happy, and useful life, and that his relations with his numerous tenantry and with all parties interested in this important district may be of the most cordial nature." He thought that they would agree with him that this was a very proper resolution to be passed. Mr. Basset would enter on a great property on the 29th, and in these days we had all begun to recognise that property had its duties as well as its rights. In the full belief that those duties would be thoroughly recognised by the young heir he proposed that resolution. (Applause.)

Mr. HENRY ROGERS seconded. He said they would shortly have to interview Mr. Basset on the subject of the lease, and he (Mr. Rogers) hoped and believed that Mr. Basset would deal with the application as a man of business, and that he would have regard to the altered peculiar state of affairs. Ten years ago East Pool was returning 30 tons of tin per week; she was now only returning 17. Mr. Basset's dues were then about £1000 a quarter; that day he had the misfortune to receive only £400. The dividend then was £2; it was now only 4s.; their income tax was £1000, it was now only a fourth of that sum. These circumstances, if looked at by any reasonable man, would, he felt sure, convince him that most serious modifications should be made in the terms of the lease. They had asked for a lease at 1-40th dues, with some other modifications in connection with the carriage of tinstuff and various matters, on some of which points he believed they would be met. If the mine was to be continued and to be at all improved it must be sunk 50 fathoms deeper, and cross cuts driven at each level. The air compressor was not in such a state as they could wish, and the question of providing stone breakers was an important one, which demanded attention. All these things together would necessitate a serious expenditure, amounting to some thousands of pounds, and they were hoping to be met, at all events partially, by the lord. He did not believe that when all these matters were laid fairly before Mr. Basset he would ignore their representations. (Hear, hear.)

The resolution was unanimously carried.

After dinner Mr. ROGERS proposed "Success to East Pool."

Captain BISHOP, responding, said he was now in the 19th year of his association with the mine. He had heard many prophecies during that time; 10 years ago some people said that East Pool was a thing of the past; others said they were working her too fast, and others again that the closing of the mine was a matter of a few months. His own opinion was that in these times of difficulty and depression they had occasion to congratulate themselves on the great success which had attended the last quarter's working. He was very well satisfied with what they had done; they were not going to shut up yet. Someone connected with a mine not very far from their own had said that they would want big engines there, because they would be sure to get East Pool water. (A laugh.) His (Captain Bishop's) reply to that was "Not before the funeral of your own mine." (Applause).

STANHOPE GOLD MINING COMPANY.—The seventh annual general meeting of the Stanhope Company was held recently at Maritzburg, Mr. Henry Griffin in the chair. The directors stated in their report that they were fully alive to the fact that the year just ended was the most important in the company's existence. It is no secret to you (says the report) that the reefs which have been so successfully and profitably worked for many years past would not last much longer, and the gravity of the position was not modified by the fact that the board did not succeed in purchasing the dip claims to which reference was made in the last annual report. The Chairman stated that they had secured the option of certain claims on the Denny-Dalton Fields, and tests as to their value were now in progress. As regards the present property work for a period would be devoted exclusively to the main reef, which gave prospects far beyond what had been expected, and which might prolong the life of the company for years. After discussion the report, as a whole, was adopted, and the directors voted £600.

MOUNT SHAMROCK GOLD COMPANY.—The sixth ordinary general meeting of the Mount Shamrock was held on Tuesday at the Guildhall Tavern, Gresham-street, E.C.—Mr. Graham King, who presided, in moving the adoption of the report and accounts, said at the beginning of the year great difficulty was experienced in consequence of floods in making progress with the new shaft. Since then the shaft had been sunk to a depth of 410 feet. It was intended to discontinue sinking at 450 feet, and then commence exploration works.—Mr. G. L. Mathews seconded the motion for the adoption of the report.—Mr. R. S. Tredgold thought that if the English shareholders provided the working capital they ought to have at least a half interest in the property instead of only one-tenth. He should not think of putting more money into the concern unless an arrangement of that kind were made with the Queensland shareholders.—The Chairman said the interest of the English shareholders was one-seventh. If they had taken up the 10 per cent. cumulative preference shares offered last year they would have had a first charge over all the property.—The motion was carried, and the meeting terminated in the usual manner.

MAY AND GLENCAIRN DEEP LEVEL SYNDICATE.—An extraordinary general meeting of the shareholders in the May and Glencairn Deep Level Syndicate was held on Tuesday at the offices, Old Jewry, under the presidency of Mr. P. Tarbutt, for the purpose of confirming as special certain resolutions previously passed, providing for the voluntarily winding up of the company, and for the distribution among the contributors, in specie, of any part of the assets of the company.—The Chairman formally moved these resolutions, which were put and carried.—Mr. W. F. Andrews having been appointed liquidator, the meeting terminated.

THE NEW MOUNT ALBION SILVER MINING AND SMELTING COMPANY (LIMITED).—An extraordinary general meeting of the members of the above company was held on Thursday at Winchester-House, Mr. Wright presiding, for the purpose of considering and if deemed expedient passing a resolution winding up the company voluntarily.—The Chairman, in moving the resolution, said there had been unfortunately no application for the debenture stock which it was proposed to issue. Letters and cablegrams from the mine stated that the only concession that could be got from the creditors was a concession of time. A letter had been received from a Mr. Richards offering upon certain terms to carry on the mine, but they should remember that in starting again they would be £4500 in arrears to commence with, and it was a question whether it was worth while to continue. The directors had no proposal of reconstruction to place before the meeting, because they did not believe they could honestly make such a recommendation, considering that although for a time the operations might pay, yet it would only be for a short time.—Mr. Robinson said he was of opinion that there was a certain amount of profit to be made by carrying on work, but though they might be able to pay everybody out there, they would be in no better position then than now, for the profits would probably not continue.—The Chairman then moved, and Mr. Raphael seconded, the resolution winding up the company, and appointing Mr. T. E. Smith liquidator, which was carried unanimously, and the proceeding terminated.

MEXICAN ASSOCIATION.—An extraordinary general meeting of the shareholders of the Mexican Association was held yesterday at Winchester House for the purpose of submitting for confirmation a special resolution, passed at a previous meeting, winding up the company and appointing Messrs. Overend Whaley, of Sunbridge-road, Bradford, and Mr. William Freeman Jack, of 13, Poultry, London, liquidators. Mr. A. Middleton, who presided, formally moved the resolution. Mr. T. C. Russell entered a strong protest against the passing of the resolution before the shareholders had been supplied with accounts showing the position of the company. He could assure the meeting that in the event of the resolution being passed he should use every endeavour to have the affairs of the company investigated by the court. The Chairman said the liquidator had already promised to supply accounts as soon as they were got out. The resolution was then put and carried.

CUMBERLAND LANDS.—The third ordinary general meeting of the Cumberland Lands (Limited) was held on Thursday at Winchester House, Mr. G. M. Clements presiding.—The Chairman, in moving the adoption of the report, said it was impossible to state that the company was in a pleasant and prosperous condition, but there was at any rate, a distinct improvement over last year. The company's affairs had been ruined by the unwise policy of the original board, who lent the working capital to a stockbroker upon insufficient security, and when the borrower afterwards became insolvent the securities left were worthless, having been written down from £5000 to £25. The capital of the company was thus hopelessly lost. Some revenue would be forthcoming from various sources in the ensuing year, but the company really wanted working capital with which to erect buildings on their lands so as to obtain rents. Still he hesitated to recommend the raising of money on bonds without seeing how the service of the loan could be secured.—The report having been seconded, after considerable discussion, it was adopted, Messrs. McHardy, Vanderpump, and Mapleson being appointed a committee to confer with the board as to the best means of raising the working capital necessary to carry on the operations of the company.

PERSIAN BANK MINING RIGHTS.—An extraordinary general meeting of the Persian Bank Mining rights Corporation (Limited) was held on Thursday at Winchester-house, for the purpose of submitting for confirmation the resolution passed at a previous meeting that the company should be wound up voluntarily under the provisions of the Companies Acts, 1862 and 1867.—Sir Lepel Griffin, K.C.S.I., who occupied the chair, moved the confirmation of the resolution, which was seconded by Mr. Clement Higgins, Q.C.—Mr. King regretted the position which the company now found itself in, and asked whether, as the Imperial Bank of Persia had sold them a bad parcel, that company could not be appealed to to make some reasonable compensation; and also whether the Persian Government could be induced to give compensation, as it was owing to the obstruction received in Persia that the company was compelled to cease operations. The Chairman, in reply, stated that at the meeting in December he dealt exhaustively with the course taken by the directors, and the representations made by them to both the Persian Government and the Imperial Bank of Persia, but as regarded the latter, the corporation had no legal claim upon them.—The resolution was unanimously carried.

EAST LONDON RAILWAY COMPANY.—This company held its half yearly general meeting on Tuesday at the Cannon-street Hotel, E.C., under the presidency of Sir E. W. Watkin, M.P.—In moving the adoption of the report, the Chairman regretted that the directors could not present a better statement. This was owing to the disastrous coal strike, which has seriously affected the dividends of many railway companies.—The report was then adopted, and subsequently, on the motion of Mr. James Best, seconded by Mr. Bourne, the following resolution was unanimously passed:—"That the attention of the board be specially directed to the necessity of opening communication with the Chairman of the Great Eastern Railway Company for the purpose of seeing whether some means cannot be devised whereby traffic between the two lines may be permitted."

## THE MINERS' FEDERATION.

### CONFERENCE AT LEICESTER.

THE annual Conference of the Miners' Federation of Great Britain was opened at Leicester on Tuesday, under the presidency of Mr. SAMUEL WOODS. There was a full attendance of delegates.

The MAYOR of LEICESTER offered a cordial welcome to the delegates, and said that the sympathy of himself and the councillors who accompanied him was entirely with the working classes.

The DEPUTY-MAYOR referred to the recent strike, and expressed the hope that no similar catastrophe would again occur.

The delegates who replied, described their reception on this occasion as unusual in the experience of the Federation, and one of them remarked that they particularly appreciated it, after such an occurrence as the great coal war.

The conference then adjourned.

#### The Presidential Address.

At the resumption of the proceedings on Wednesday, Mr. PICKARD, M.P., delivered his presidential address. He advised the delegates to pass strong resolutions denouncing the Lords for their action in regard to the Employers' Liability Bill, and upholding the Commons in their endeavours to make the Bill worthy of its name. A large part of the address was devoted to the great coal dispute and the general question of work and wages. During the whole period of the dispute, Mr. Pickard said, not one penny more was paid for the coal that was got than had been paid prior to the stoppage; and bearing this in mind, the prices paid in London, which meant 15s. or 16s. a ton profit, made one's hair stand on end. Who would not be a London coal merchant at such times? He suggested co-operation as the remedy for such a state of things. With regard to the conference presided over by the Earl of Rosebery, Mr. Pickard spoke of his lordship as having very soon impressed the miners' representatives by his fairness, but remarked that the colliery owners were evidently prepared to accept terms on that occasion which they had declined at the Mayors' Conference in Sheffield. He expressed the hope that a permanent Board of Conciliation would be arranged.

A resolution was carried unanimously in favour of the Miners' Eight Hours Bill being adopted by the Government and passed into law during next session.

#### Trade Fluctuations.

At the resumption of proceedings on Thursday Mr. SMALL (Lanarkshire) urged the desirability of establishing a department to watch the fluctuations of trade and issue regulations to prevent unscrupulous competition, but eventually modified his proposal to an instruction to the executive to collect information as to the accumulation of coal on pit banks and communicate to the different branches of the Federation when such accumulations should be deemed by them a danger to the interests of miners. In this form the proposal was unanimously adopted. Resolutions were also carried in favour of levying a uniform contribution of 6d. per week from all members of the Federation, of amending the Mines' Act so as to require a thorough inspection of each pit at least once in three or four months, of limiting the hours of work of colliery engine-keepers to eight per day, and dealing with other subjects.

# GEOLOGICAL COINCIDENCES IN VICTORIA.

## II.

(*Concluded from page* 31.)

FROM A CORRESPONDENT.)

CONTINUING my "Coincidences," I now come to—

### The Origin of Reefs of Gold.

Mr. N., *Mining Journal*, November 18, 1884, paragraph 2 (near end):—". . . There cannot be any doubt the quartz reefs have in shape very often conformed to that of the bounding strata in which they occur."

Mr. N., *Mining Journal*, November 8, 1884, paragraph 1:—"The slides or faults in the Garden Gully reefs conform in their dip north with that of the saddles of the reefs, and the saddles of the reefs, whether broken or of the true crescent form with the dip of the corrugation of the strata in which they exist. . . ."

Mr. N., *Mining Journal*, July 19, 1884, paragraph 13:—"Seeing the interbedded positions of the saddle formed reefs on this field. . . ."

Mr. N., *Mining Journal*, 18th October, 1884, paragraph 2.—"Form of Reefs." — The quartz miners of Bendigo will recollect that the outcropping saddle formed reefs had the crescent form, and that they were parallel with the strata above and below them."

### The Origin of Reefs and Gold.

Mr. Nicholas "The origin of Gold and Quartz Reefs," in *Mining Journal*, November 18, 1883. . . , "It is impossible to bend or corrugate solid horizontal strata, such as sandstone and 'slate,' without those strata 'slipping' over each other in the lines of least adhesion. Those lines of least adhesion in the strata were undoubtedly for the most part between the beds of slate and sandstone, or within the slates where the bedding planes are well defined. We know the strata were originally deposited, and are now of unequal thickness. Therefore the 'lines of space" were forming when corrugation, and 'sliding' were taking place. . . . Now in these 'sliding lines.' . . . would lodge water. . . . the mineral waters . . . . were at work . . . changing especially the slate into quartz reefs and veins . . . and the conclusion I came to was that the organic matter in the 'soft black carbonaceous slate,' when this slate was decomposing and changing into quartz, became both the precipitent and nucleus for the extraction of gold from the mineral waters that circulated in the 'tracks' and reefs. . . In those situations where the strata were very adhesive, and not pliant corrugation still steadily but very slowly progressed, fracture lines crossed the strata at points where the strain was greatest or the resistence was least. The most favourable points for such fracture lines would be in anticlinals especially, and also in 'synclinals.'"

Mr. N, *Mining Journal* December 1, 1883, end of paragraph 2: "Of reefs in the first stages of growth are 'tracks' (backs) of reefs. These can be found from the incipient 'sliding' or birth lines graduating up to the true laminated quartz reef, stage by stage." Paragraph 3 . . . "But it is not an uncommon thing to see the two rocks, slate and quartz gradually merged into one another through such gradations as 'chrysoprase,'" . . . Paragraph 10: "However little insight this paper may give as to the origin of laminated or banded lodes in other countries, I trust I have at least produced sufficient facts to warrant me in concluding that Victorian auriferous laminated quartz reefs are simply altered auriferous carbonaceous slates or clayey sandstones, and that through this transformation some of the gold in reefs was obtained by precipitation from the pervading mineral waters. Thus quartz and gold were formed by one operation in Nature."

Mr. D., page 12, paragraph 7:—". . . as the quartz forming the saddle reefs conform generally with the containing rocks." . . . page 11, paragraph 6:—. . . "This feature is shown on the longitudinal section along the course of a portion of the New Chum line, showing the extensions of the saddle reefs which are conformable to the general stratification.*. . ."

Mr. Dunn, page 12, paragraph 9. . . "First of all the beds were disposed horizontally one above the other, then they became buckled, and ultimately corrugated. . . . 'slipping' of the several layers on each other takes place, as the great mass of strata became bent the beds separated along the stratification planes. . . . A very practical interest centres in these evidences of 'slipping.' . . . Such movements of the strata over one another would be most likely to occur where the cohesion between the two beds was slight, or where an unusually soft bed occurred between harder ones, and just in such places are the 'backs' met with, generally slaty rocks, very often in the 'soft black slates." . . . Along these lines the quartz began to deposit, and it accumulated until in some instances bodies of quartz several feet thick have been found, and through this the gold is disseminated . . . page 13 paragraph 2 where it has occurred that a particular bed, such as 'soft black slate' . . . such a soft band would be a line of separation, and that it would form 'backs' and 'walls,' and such 'backs' are indubitably connected with the presence of gold." . . . Page 13 paragraph 3: "Between the beds where 'slipping' has occurred or along the course of the 'backs." Page 15 paragraph 6. . . "Generally they ('saddle reefs') appear to have formed in cavities caused by the bending over sharply of the unyielding (sic) rocks of this region; these cavities resulted when two beds were in contact that yielded unequally at the point of bending along the lines of arching. (Fig. 42) page 15 paragraph 6. . . . It happened in some cases that the enormous strains exerted on the rocks at the arch was so great that the rocks as the bend became sharper were riven and they opened out. (Fig. 43.) In these cavities the quartz forming the 'saddle reefs' also extended. . . . At first the quartz probably accumulated in the cavities from telluric waters holding silica in solution. . . ."

Page 16 paragraph 6: "Although the quartz at first accumulated in fissures, joints and in chasms and cavities. After these became filled with the crystalline mineral, it is more than probable that the process of accretion still proceeded, and immense pressure was exerted in enlarging the bodies of quartz. There is much about the appearance of some of these bodies to countenance such a view. . . ."

*Mr. George H. F. Ulrich, M.E., F.G.S., a member of the old Geological Survey under Selwyn, and now Professor of Geology, University, New Zealand, said: "Regarding the dip or underlay of the reefs . . . . but its angle is often so nearly identical with that of the strata as to impart to the reefs the appearance of interstratified deposits. . . . Geology of Victoria, 2 paragraph page 59.

Mr. N., *Mining Journal*, 25th November, 1884. . . . "As the strata differ in constitution and thickness they would, when cooling, contract unequally, and in so doing separate more or less from each other in places in accordance with the amount of diversity between them."

Origin of Gold and Quartz Reefs, *Mining Journal*, November, 1883. Mr. N. . . . "I do not think it necessary nor do I think it possible that these 'sliding' or fracture lines should open or did open so as to provide our reefs or veins with space in which to form."

Page 16, paragraph 4. . . . "The beds have been sharply bent over leaving cavities; they have been ruptured leaving chasms. The beds have undergone the greatest strain, such as torsion, &c., producing fissures, and the quartz has accumulated in all these favourable sites. In the synclinal axes some little quartz occurs but in quantities of minor importance, and not to be compared with the accumulations along the anticlinals. The reason for this appears sufficiently obvious, for in the case of the anticlinals the action that took place resembled bending a lath over the knee, the arch, too was formed against the overlying pressure." (Fig. 46).

The reason is not so obvious as Mr. D. would make it appear by the "bending of a lath over the knee, and Fig. 46—but I assume he means there is vertical pressure upwards in the anticlinal and downward in the synclinal, although in his explanatory diagrams 46 and 47 the lines of pressure are downwards as indicated by arrows on the sides of the anticlinal and the synclinal. This is apparently one of his own ideas, so I will simply complete the quotation—"(Fig. 46) while in the case of the synclinal the beds formed so many troughs, the one inside the other, and the pressure was all downwards towards the axes, with a wedge-like action that would very thoroughly prevent cavities being formed, and thus restrict the accretion of quartz."

Mr. N., *Mining Journal*, 27th December, 1884. . . These black slates I found would precipitate gold from solution, and this property is no doubt partly due to the graptolite so commonly found in them. I regard graptolite bearing slates near to or adjoining a quartz reef as a good indication of its proving auriferous."

"BRANCH VEINS."

Mr. N., *Mining Journal*, October 25, 1884, paragraph 2:—"These joint lines appear to have originated in many cases the branching quartz veins." . . . (or spurs).

Geikie's "Geology Primer," Article 189:—"This solid rocky 'outer' part of the earth on which we live into which men sink mines . . . is called the earth's 'crust.'"

Article 187. . . . "And thus somewhat like the skin of a dried and shrivelled apple the surface of the globe would be ridged up in one region. . . ."

Page 6, paragraph 5. "Owing to the absence of well marked beds . . . . there is a difficulty in determining the horizon of the beds of different points. It is possible that the bands of fossiliferous slates may eventually prove of service. . . ." page 9, paragraph 1. . . . "these more productive zones will have to be located . . . latter on a recognition of them will be of great service."

"SPURS."

Mr. D., page 16, paragraph 3: "These spurs . . . are met with at right angles to the strike of the rocks, and parallel to it. They often occur filling joints. . . ."

Mr. D., page 10, paragraph 9 . . . "Such vast movements of the earth's outer crust must have greatly helped in the building up of the mountain chains, and in shaping the outer skin of the globe."

And now, Mr. Editor, I will bring my remarks on this subject to an end, not, however, for want of more coincidences. Having read this "Special Report" through carefully, and with great disappointment I have come to the conclusion that the gentleman that has undertaken the writing of a monograph on this assuredly very interesting mining field, is quite unequal to the task set him by his superior officers, notwithstanding that he asserts he "fully grasped" the cardinal points soon after the work was begun. The report is void of classification, plan, or system. Statements are persistently placed under the wrong heads, and the reader is impressed from first to last, and especially last, that the work is to say the very least of it "confused patchwork."

The absence of classification is so distinctly noticeable—and, I may say, annoying to the reader—that it is strange so clever and quick a man at grasping fully nature's problems should have allowed this important subject (to a student) to pass unobserved.

I regret that I have no option left me but thus to conclude my remarks on the work of a member of the Geological Staff of Victoria, which staff has hitherto produced as a rule reports, and plans, &c., of a very superior class, and of which any new country might well be proud.

It might be best that they draw the line at ambitious "Monographs."

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GOLD IN WESTERN AUSTRALIA.—The future of Australia being largely dependent on the supply of the precious metals the news of abundant gold being probably embedded in the soil of Western Australia becomes important. At present alluvial washings only have rewarded the toil of the discoverers, but before long there is every reason to believe that great gold bearing reefs will be laid bare. Now, wherever there is gold there is also the tendency to gambling transactions, and to the formation of bubble companies floated on the strength of the genuine deposits of ore to attract the greedy and the mere speculator. Our correspondent declares that, on the strength of the rich Bailey's Mine, there is the danger of the flotation of companies that are rotten and will bring nothing but disaster to those who are hazardous enough to embark their fortunes in them. We know how failures of this kind are sure to react on the prosperity of the colony, whose economic progress is thus at the mercy of the speculative gambler. And thus the very cause which might be reckoned upon to increase the wealth of Australia and to build up the fabric of her greatness is also liable to plunge her into economic disaster and financial ruin. The troubles in Victoria and New South Wales have been due almost entirely to the gambling spirit which has manifested itself in wild land speculation. Now Western Australia is liable to be plunged into the vortex by these remarkable discoveries of gold. To investors here we can only recommend a wise abstinence from the speculative fever, a resolve not to be caught by the promises of promoters who will be ready to float mining shares on the London market because of large and genuine yields in certain places.—*The Daily Chronicle.*

THE MATABELE WAR.—The hopes which were very generally entertained that Major Wilson's party might somehow have escaped from the hands of the Matabele were ended early in the week by authentic information that they were all killed, fighting to the last. The little party made a gallant defence, and used their revolvers with telling effect from behind such cover as was afforded to them by their dead horses. The enemy, however, rushed in and overpowered them, killing them finally with the assegai. Lobengula is reported to have retreated further towards the Zambesi. The conference between Sir Henry Loch, the Hon. Cecil R. Rhodes, and Mr. Hoffmeyer regarding the Matabele settlement lasted three days. The arrangement is understood to include the confirmation of the Provisional Government and the establishment of a native court of appeal. The latest telegrams state that the King is anxious to surrender, and that he has killed the induna who led the attack upon Captain Wilson's party. Lobengula is at present near the junction of the Gwai and Zambesi rivers. Major Grey's column is to be disbanded on its arrival at Macloutsie, but strong patrols will be sent out in all directions where armed resistance continues.

# METALLIFEROUS MINING IN CALIFORNIA.

## INTERVIEW WITH MR. JOHN HAYS HAMMOND, M.Inst.M.M., M.Amer.Inst.M.E., &c.

THERE are few names more familiar in mining circles in America, and more particularly, perhaps, on the Pacific slope than that of Mr. John Hays Hammond, the well-known mining engineer, whose head-quarters were at Cocker Buildings, San Francisco. Indeed, his name is almost as well known on this side of the Atlantic as it is on the other, and it may be taken as a general axiom that any enterprise with which Mr. Hammond is associated carries with it the certain hall-mark of being "a good thing." Mr. Hammond was a few months ago appointed to take the management of some very important mining interests in South Africa, and, before leaving for the Transvaal he paid a flying visit to London. Naturally during his sojourn in "the village by the Thames" he gravitated towards *The Mining Journal* office, in order to shake hands and exchange notes with us. The penalty of his foolhardiness was an interview; but we found him tractable, and courteously willing to place his views on mining on the Pacific coast, and more particularly gold mining in California, at our disposal. By this time Mr. Hammond will be well settled in his new quarters in South Africa, whither he carried with him the best wishes of those who have watched with interest the course of his professional career, which has been an exceptionally brilliant one.

Just one word more about Mr. Hammond: his engagements in the past have certainly been as numerous as they have been important. He has officiated as consulting engineer to the Southern Pacific Railway system; to the Union Iron Works at San Francisco; and to a host of mining concerns, amongst which, perhaps, we might particularise:—The Bunker Hill and Sullivan Mining and Concentrating Company, of which he is President; the North Star Gold Mining Company; the Empire Mining and Milling Company, and the Gold Hill Mining Company. As these are Western concerns Mr. Hammond found it convenient to establish his headquarters at San Francisco.

### Gold Mining in California.

When we had comfortably settled ourselves *vis-à-vis*, and completed a preliminary conversation of a general character, the attack was initiated by our asking Mr. Hammond the extent of his practical experience in gold mining.

"I have had a very extensive experience in gold mining," replied Mr. Hammond, "having acted as general manager of some of the largest and best known gold mines in the State of California."

"Then, that being so, Mr. Hammond, what is your opinion of the future of gold mining in California?"

Mr. Hammond had no hesitation in replying to this question. "I think," he said, "California has a very good future before it in gold mining—that is, I should say, in quartz mining."

"And what about the alluvial?"

"There are hundreds of millions of dollars-worth of gold in the alluvial deposits, but the great question has been: how can they be worked satisfactorily without causing injury to the farming lands beneath them? I may say in this connection that I was a Delegate representing California at Congress. The State of California was losing very seriously by the shutting down of hydraulic mines. People now are almost unanimous as to the advisability of resuming hydraulic operations."

"Then, Mr. Hammond, what is really the principal difficulty in dealing with the alluvial?"

"It is this," replied Mr. Hammond. "The large hydraulic mining operations, which are necessary to effect the production of the precious metal, wash down a tremendous amount of material, slimes, and so forth. The coarser material is generally collected in the upper portions of the canyons into which these mines empty their debris; but the finer material is carried down into the lower canyons, and remains deposited there. This, of course, results in filling up the levels of the rivers, especially at high water, causing inundations upon the farming lands, which are very injurious to the local agricultural industries. Some of the large mines, such, for instance, as the North Carolina and others controlled by the same company, and which were under the management of Messrs. Hamilton Smith, and Perkins, have established a system of impounding dams."

### Hydraulic Mining and the New Bill.

"And with any degree of success?"

"Oh, yes, with more or less success. The method simply means the construction of a system of dams so built as to allow the finer material to settle and the clear water to overflow to prevent the slickings from being carried down into the low lying lands. The Act of Congress recently passed, called the Caminetti Bill, provides for an examination of hydraulic mining districts in the City of California by the United States Government engineers. These engineers are to report as to the feasibility of conducting mining operations in these various districts by using impounding dams without injury to the farming lands below and the navigable streams. After these engineers shall have made their examinations they recommend certain sites for the building of impounding dams. The expenses of these dams are to be defrayed in the first instance by the United States Government. After the mines, however, have resumed operations 3 per cent. of the gross earnings of these mines is to be applied partly to the erection of those dams built in the first instance, and to the erection and maintenance of dams subsequently built under the direction of the Board of Engineers."

"How do the inhabitants of the districts more immediately concerned look upon this Bill?"

"Well, I may say that in the State of California the Legislature passed a Bill, almost unanimously strongly, favouring the resumption of hydraulic mining, and showed, I think, a unanimous sentiment that the resumption of this branch of local mining industry was very much to be desired. There was a strong opposition on the part of some of the farmers, who have exaggerated in some instances the amount of damage done, while in other cases they were desirous of making political capital out of the agitation of this question. The interests represented by those malcontents are, however, very insignificant in comparison with the benefits to be derived by the community at large from the new system."

"Generally speaking then, the concensus of opinion may be taken to be in favour of the new Bill?"

"Yes, without doubt. I might say in this connection that there are hundreds of millions of dollars expended in bringing in water and building reservoirs, and developing these properties. The importance of the industry can, therefore, be appreciated."

### Quartz Mining.

"Then what about quartz mining, Mr. Hammond?"

"Well, in California it might be said generally, with the exception of a few discoveries made from time to time, that quartz mining has resolved itself into an economical development of low grade, or comparatively low grade, mining properties, which a few years ago could not be profitably handled. These can now be worked profitably by the introduction of better mining methods and appliances. We are working on lower grade

material than has been handled previously. In the early days of mining only such deposits were worked as were extremely rich on the surface. Those deposits have now been worked out. There are, of course, a great many other deposits of relatively low grade which can still be made to pay by better mining methods. That, so far as quartz mining is concerned, is the future hope of California. In point of production the future of quartz mining is more important than that of hydraulic mining, because the hydraulic deposits are of limited superficial area, while the quartz mines extend in depth and may be worked long after the hydraulic mines are exhausted. But still there is a very large extent of auriferous gravel territory which can be profitably worked by hydraulic methods."

"You still consider, then," we asked, "that the gravel mining is by no means played out?"

"Certainly not. In fact some of the very best gravel mines of the State were just starting to produce when the process of law shut them down. With reference to quartz mining, the best are mines which have been abandoned and reopened. These mines were closed down through extravagant management, but have been reopened and are now producing very profitably. Two of these I have reopened myself, and they have paid the cost price of the properties and are paying large dividends to-day, simply by the introduction of better and more recent methods of extraction."

"What is the principal system of extraction now being adopted in those districts?"

"The system of gold milling in California is similar to that in Johannesburg. Probably there are some improvements in the details of the process in California, but upon this I am not able to speak very definitely, as I am not familiar with the processes now used in South Africa."

"In the actual matter of extraction of gold, is there any particular process which obtains in California in preference to others?"

"No, I cannot say there is. Our method, broadly, consists of amalgamation, concentration, and the extraction of gold from the concentrates by, usually, the chlorination process—that is the old Plattner process."

"Have you done anything locally with the cyanide process?"

"Not in California. In some localities it has done fairly well, but, like all processes, it is not generally adopted."

### Lead, Silver Lead and Copper.

"Then, apart from gold mining, Mr. Hammond," we asked, "what have you to say about other metalliferous mining industries in and around California?"

"Well, there is little to say. There is not much activity in the other metal mines. Indeed, comparatively little can be said about the States generally in this particular. The low price of silver, and the depreciation in the value of lead has necessarily affected the American lead and silver-lead mines. Copper keeps up its price pretty well, and the copper mines are being profitably worked in many parts of the Union."

Mr. Hammond had, at the time of our interview, just returned from Edinburgh, whether he had gone to present a report to the directors of the Arizona Copper Company. "This property," said Mr. Hammond, "is being worked at a profit, and they may be able to recover a considerable portion of the money which was originally invested."

"Perhaps I should mention," added Mr. Hammond, as we returned to the main thread of the conversation, "that I am the President of the Bunker Hill and Sullivan Mining and Concentrating Company, which is the largest lead-producing mine in the United States. We have had a good deal of trouble with the labour difficulty, but have succeeded in settling that satisfactorily to ourselves, and at present we are closed down on account of the indisposition of the railroad company to make any reasonable rates with us."

"You have your railway rates troubles, then, out West, just as we do on this side," we suggested.

"I should just think we have. Why we have been paying $16 per ton, and have been shipping from 80 to 90 tons a day, as against railroad rates paid by Butte City.

### The Mechanical Engineering of Western Mines.

"Have you anything to say about the mechanical engineering of your mines?"

"Well, we have the Mona lead concentrate plant with a capacity of 800 tons per 24 hours. Our ore is carried on a Bliechert aerial rope tramway a distance of two miles. It is delivered into the mill and is automatically worked through all the operations of concentration. We employ about 500 miners and surface men, the general average wages being three dollars 42 cents per day per man. The plant was made by Messrs. Fraser and Chalmers, of Chicago, under our specifications, and it is said to be one of the best plants existing for economy in working. We have water power brought in from a distance of three miles in a large Frue carrying 10,000 miners inches, developing about 1000 H.P. at the mill. Our property is what is considered a large low grade mine, and in order to work this property to advantage continuous operations must be obtained, and economy in all directions exercised. The system adopted is the ordinary German concentration process, consisting of crushing by rock breakers and rolls, then sizing by trommels and concentration by jigs, with further classification by hydraulic classifiers, and the concentration of slimes by revolving buddles and Frue vanners."

### English Experts and English Capital.

"Do you favour the principle of a company or syndicate over here that is interested in a property in America sending a man out from here to inspect and report, or do you think it better to engage a man who is already on the other side?"

"I think local experience—experience of the people of the country and the conditions of mining—is a *sine qud non*, together with a ripe judgment as to the value of a property. I think that English engineers, when there is very much at stake, should have some local engineer to co-operate with them in making their inspections and investigations."

"You would not recommend an English syndicate to employ an English mining engineer unless he had some local knowledge in addition to his own?"

"I should prefer to say that I think he should have the assistance of some local engineer. There are a great many English mining engineers who have had extensive experience in our country, and who are therefore good men. I think there is no economy in trying to save the expense of experts in the first instance. If the property turns out a good thing and is taken up on the recommendation of an expert, the fee is insignificant in comparison with the benefits accruing. On the other hand, if the employment of some local engineer should result in preventing the company from investing its money there is a good deal saved."

"How is it that so many of your countrymen come over here to seek capital for their mines?"

"We do not come over here except for money for enterprises requiring large investments. Our own engineers of good standing can raise all the money for the small operations, but it is difficult to get money for very big mines in our country. A good engineer who is successful and has the confidence of the public could get all the money for small enterprises, but when it comes to large amounts he can do much better in England.

# THE EDITOR'S LETTER BOX.

*** We wish it to be understood that we do not hold ourselves responsible for, and do not necessarily endorse, the opinions of correspondents. All communications must be accompanied by the names and addresses of the senders, though these need not necessarily be published.*

## CORNISH MINING: ITS FUTURE.

TO THE EDITOR OF "THE MINING JOURNAL."

SIR,—Cornwall is probably the richest mineral territory of its size in the known world; its marvellous resources have long been a matter of historical record. From the year 1726 to 1880 its tin and copper mines yielded the enormous amount of £117,000,000, a result worthy of the fostering care of the owners of mineral land. The great extent of surface rummaging on the lodes have not made any material drain on their resources, but sufficient to demonstrate their prospective richness. Improved mechanical appliances and augmented scientific data afford opportunities for the successful development of the greatest tin field yet prospected throughout the known world. From the granite range near Callington in the eastern part on a line west through the centre of the county in proximity to granite upheaves may be seen mineral veins hitherto disregarded, the outcrops of which resemble closely those found to denote the great mineral repositories around the granite in the more western parts. The St. Austell district (in the centre of the county) presents strong evidences of becoming a deep tin producing area. The produce sold from the shallow operations of Polgooth, Hewis Rocks, Boscundle, South Crinnis, Wheal Eliza, East Crinnis, Pembroke and others (if we take Dolcoath, Carn Brea, and other productive mines as analogous evidences) all point to being in a transition rock, below which a continuation of the ore bearing ground will be found. The comparatively recent introduction of rock drilling machinery give facilities for the more speedy consummation of this established theory, but I desire more particularly to call attention to the advantage of similar shallow ore deposits as they are less expensive to work and paying better than the deep ones, added to which the miner must avail himself of all the advantages accruing from their produce, the greatest of which is from the black tin ore or oxide (as now sold to the smelting companies) into tin metal by the miners becoming their own smelters and competing in the world's market with the refined article, white tin. The existing monopoly in the tin smelting trade throws dust in the eyes of those in favour of smelting their own ore by the outcry of the essential admixture and expensive erection of works.

To this my reply is from a practical tin smelter of 17 years active experience, who says "such mines as (here follows three of the largest producing mines of the county) could smelt their own respective ores without the slightest difficulty as to admixture, the quality of the metal from which would be all that could be desired, and would always command the best market. Mount Bischoff Tin Mine in Tasmania smelts its own tin with every satisfaction. It is a great mystery why Cornish mines do not smelt their own tin, or at least the largest of them. I am prepared to smelt the ores from any one of the before mentioned mines by themselves, and guarantee a most satisfactory result. The cost for the erection of smelting works to treat 100 tons of black tin per month would be about £300."

One of the greatest English industries is allowed to wane from a want of enterprise to arrest its downward course, whilst the additional application of conditions simple and inexpensive offer £ s. d. inducements for the employment of capital, viz., the development of the great unwrought tin fields of Cornwall, which are second to none in the known parts of the globe. Their expansion of yield and profit will revive the brilliant era of profitable mining of bye-gone days, and place Cornish mining stock among the leading securities of the stock exchanges of the world. This prediction can be justified to a small extent by the fact that the modest rate of 5 per cent. on the yearly quantity of tin sold from the mines of Cornwall will give a sum total of about £25,000, which now goes into the pockets of the middleman (smelters), but should be taken by the more deserving producers (the miners), and help to maintain the good name of the old industry. —I am, Sir, yours obediently, CHARLES BAWDEN.

*Poldice House, St. Day, Scorrier, Cornwall.*

## "GOLD IN COLORADO."

TO THE EDITOR OF "THE MINING JOURNAL."

SIR,—The recent and present discussion of the Silver Question has left many persons with the impression that silver mining is almost the one industry of Colorado; but, besides her other mineral, agricultural, manufacturing and climatic resources, Colorado is no less a gold mining State. From 1859 to 1892, inclusive, she produced, according to the statistics published by the director of the U.S. Mint, over £20,800,000 of gold, and of the total gold product of the United States in 1892, viz., £6,600,000, Colorado alone furnished £1,107,804. It was the discovery of gold in the Pike's Peak region that attracted the pioneers of 1859, and from that year till the end of 1869, Colorado produced over £5,400,000 of gold, as against only £66,000 of silver. From 1869 onwards, silver attracted increased attention, with a corresponding neglect of gold mining.

The steady appreciation in the value of gold during recent years, and its increasing purchasing power as compared with all staple commodities, and the decreased expense of mining and freighting ore, now enables low grade gold mines to pay that did not pay years ago, and attention has again been directed to the gold resources of Colorado, showing the resulting increased product:—1889, £727,245; 1890, £803,246; 1891, £953,000; and 1892, £1,107,805. The year which has just closed, however, demonstrates these facts in a much stronger manner, the gold product of 1893 exceeding £1,500,000, with every indication that that of 1894 will more than double that of 1893. A brief notice of the recent development is interesting.

Cripple Creek two years ago was simply known as a prospectors' camp to the south-west of Pike's Peak, and 28 miles from a railroad. In 1892 ten mines produced about £120,000 in gold, and for 1893 over 30 mines produced £500,000, mostly during the last few months. The drawback has hitherto been the expensive wagon haul of the ore to the nearest railroad point for shipment to the smelters, but the Midland Terminal Railroad has now been opened up to within eight miles of the camp. The remaining distance will be covered shortly, and in four months the Florence and Cripple Creek Railroad will also be running. The advent of these railroads, furnishing cheap transportation, will give the district a great impetus, improved processes and treatments are being put in, new shipments will be added to the list, low grade ore (of which experts claim there are £20,000,000 in sight) can be handled profitably, and the output for 1894 will certainly exceed £1,000,000. Cripple Creek gold mines will do for Colorado in 1894 what Leadville silver mines did for her in 1879, that is, give the whole State a wave of prosperity.

In Lake County, hitherto world-renowned for its silver mines, has been discovered within the last few months, a gold belt, which during November and December produced at the rate of £700,000 per annum, one mine alone producing over £800 per day. Experts calculate that Lake county will produce £1,000,000 in gold during 1894.

Gilpin county, the oldest gold district in Colorado, in 1893 produced £500,000, the later months of the year showing an increased rate, and will probably turn out £800,000 in 1894.

Similar particulars might be given as to Clear Creek, Boulder and Summit counties and the San Juan district, also as to new gold mining camps in Park, Chaffee, Gunnison, Eagle, La Plata, and other counties. Suffice it to say, in the words of a recent writer, it is clearly demonstrated that Colorado has a great mineral belt extending in a general north-easterly and south-westerly direction, with its centre on the crest of the continental divide, or the main range dividing the waters of the Atlantic and Pacific slopes. It is in places over 100 miles in width, and there are many spurs of mineral bearing country projected from the principal belt. In every country on both sides of this vast storehouse of wealth gold has been found, and in some of them the deposits are of extraordinary richness and extent. Traces of gold can be found in every stream flowing down from the main divide and but an infinitesimal percentage of the veins or lodes from which the gold has worked down has yet been discovered. In the early days of Colorado, transportation was costly and then existing methods of treatment failed to save the value of the gold ores. Subsequent improvements have been made to such an extent that it pays to reopen old gold workings, and there are now in all of the old gold counties dozens of properties producing after years of idleness. The mountains have been carefully traversed by experienced prospectors, and scarcely a day has passed for months that new strikes have not been reported, followed soon after by samples of ore or gold retorts.

Everything indicates that Colorado's gold product for 1894 will reach and perhaps exceed £4,000,000 sterling,—I am, yours faithfully, THOMAS TONGE.

*January* 6, 1894.

## CHAMPION REEF GOLD MINE.

TO THE EDITOR OF "THE MINING JOURNAL."

SIR,—If the record of successful mining and unbroken success can make a good meeting, then these elements were certainly not wanting at the general meeting last Wednesday. The Chairman's speech bristled with good things, and amply made up in quality what perhaps it lacked in verve. Mr. Taylor was in good form, and his speech, seldom more lucid and masterful, evinced a thorough grasp of the subject and mastery of every detail down to slanting boundary lines, and to those freaks in the reefs called "folds."

We were informed by the Chairman that "five distinct mines" were being worked. It is not usual, we believe, in the western counties to designate every shaft a "mine," but this little rhetorical exaggeration was cordially received; for shareholders are not always mining experts and are not severely critical or disposed to stand out for exact technical definitions when they are assured that they have a splendid property from boundary to boundary, that the shafts are going down in rich auriferous quartz, that the reserves have greatly increased, and are steadily increasing, that in addition to the battery of 40 heads at work, another 20 heads will probably be at work in March, and a further 20 heads, already ordered, will, it is hoped, be ready to start in July next, and, most cheering of all, that handsome dividends, to commence in March, are in prospect.

It was satisfactory to learn also that the tailings, which have been accumulating ever since milling was started in July, 1892, and which must now amount to nearly 30,000 tons, are to be treated forthwith, the Wheeler's pans, &c., for which will, it is expected, be ready this month. From this source 300 to 400 ounces of gold per month are looked for, and sanguine hopes are held out that in a few months' time the present returns of gold will be doubled.—Yours faithfully, MINING ENGINEER.

*January 19th*, 1894.

## GOLD IN WALES.

TO THE EDITOR OF "THE MINING JOURNAL."

SIR,—With reference to your letter in last week's issue, from Mr. J. Fraser, we admit the fact of the existence of the auriferous belt in the 20 miles of Lingula flags in Merionethshire, extending from the sea coast to Festiniog, and the gold has been precipitated under the same laws that have produced it in other parts of the world, Australia, North and South America, Africa, &c., &c. The diorites and other intrusive rocks having played their part in concentrating the gold in a native state in shoots and strings and also saturating the surrounding veinstuffs with undeveloped, or what I would properly term ores of gold, up to the present time the attempts to work the auriferous reefs of North Wales have been attended with little success. The "picking the eyes out of the mine" policy, is the one that seems to have been followed. Large quantities of gold ores have been mined and treated with contempt, till the little string or shoot has been reached, or, in other words, the millions of tons of ore are ignored for the few tons showing the visible yellow metal, then these rich little bits are treated by wasteful processes, as when the ore is so rich it matters little about loss—and loss there is to a greater or less extent. Now, then, I contend that the gold in Wales will not have a fair trail until the ores are taken down from wall to wall and properly treated; the process and treatment that would do that has not yet been introduced into the principality, but the gold miner has been blinded by processes quite inadequate to deal with the subject, and the result is that the gold still remains in the millions of tons of auriferous ores untouched, waiting for science to win it by a more legitimate means than has yet been brought to bear upon them. Let us hope that the day is not far distant when the subject will be better understood and Wales will do her part in assisting to increase the supply of the much-needed yellow metal.—I remain, yours faithfully, A. C.

*January* 17, 1894.

[We have received two letters signed "Mozambique" and "Spitzkop," which, owing to extreme pressure on our space, we reluctantly hold over until next week.—Ed. M.J.

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PEEL RIVER, LAND AND MINERAL COMPANY.—The forty-first annual meeting of this company was held yesterday at the offices, Palmerston Buildings, under the presidency of Mr. A. E. Scott.—In moving the adoption of the report and accounts, the Chairman remarked that, taking into consideration the extraordinary depressed state of affairs in the Australian colonies, they had some reason to congratulate themselves upon the result of their work during the past year, although the earnings had been some £8000 less than those of the previous year. After observing that the true policy of the board was to do everything they could to develop their suburban land, he said that on the whole, in spite of bad times, they had made steady progress. The only cloud was the fall in the price of live stock; but he was glad to note that the prices of Australian and Queensland sheep were rising. The wool market showed no immediate signs of improvement but revival was only a question of time. Mr. Oswald Smith seconded the motion, which was carried, and a dividend of 2½ per cent., making 4½ per cent. for the year, was declared.

# THE POSITION OF BRITISH TRADE.

## SIR COURTENAY BOYLE'S OPINION.—ADDRESS AT BRADFORD.

A conversazione given by the President of the Bradford Chamber of Commerce took place in the Technical College, Bradford, on Monday night.

In the course of the evening a meeting was held, when

Sir COURTENAY BOYLE, in seconding the adoption of the report proposed by the President, took the opportunity of speaking upon the present position of trade. When he was at Plymouth last year, he said, it was his duty to point out that, looking at trade over a large period, there was nothing to be alarmed at in the position; that trade had gone through periods of prosperity and depression; that one was succeeded by the other; and that as a whole the development of trade, epoch by epoch, was steadily progressing. He had been very much assailed for saying that, but to that position he adhered most obstinately. (Applause.) Comparing 1890 with 1860, our trade had advanced very rapidly. When he came to the present position of trade he could speak to them in no such jubilant tone. The figures for last year were painful reading, however they might gloss over the fact, and whatever qualification they might impose upon the lessons which they taught. The total imports in 1892 were 4½ per cent. more than the total in 1893, and the total exports in 1892 were 4 per cent. more than the total in 1893. The imports in the month of December last were, however, only 3 per cent. lower than the imports of December, 1892, and it seemed as if in that month there was a slight reaction. In exports that did not obtain, for while the average for the year was 4 per cent. below 1892, that for the month of December was 10 per cent. The first and most important item among the imports was that of articles of food, and of articles of food probably the most important were wheat, wheat meal, and flour. With regard to these things some very curious results were observable in the last two years. In 1892 we imported in round figures 87,000,000 cwts.; in 1893 we imported nearly 86,000,000 cwts. The value in 1892 was £37,000,000; in 1893 it was only £31,000,000. The tale with regard to exports was a sad one, but he was only going to refer to the pleasantest parts of it. In 1892 we sent 57,800,000 yards of cotton piece goods to Bombay of the value of £480,000; in 1893 we sent 82,500,000 yards of the value of £720,000. The figures to Bengal were still more remarkable. In 1892 we sent them 75,000,000 yards, of the value of £610,000, and in 1893 we sent them 125,000,000 yards, of the value of £1,000,000. He thought the sudden development in the latter end of 1893 was a hopeful sign. With regard to our colonies, unhappily our exportations to Australasia had fallen off enormously. He was afraid that our Australian cousins were poorer than we were, and they could not take as much of our produce as they used to do. It was reported by the Labour Department of the Board of Trade that in 1893 there were in this country no less than 635 new trade disputes. One of those disputes was probably the most dire in its effects that had been known for many generations. Without, he hoped, treading upon anybody's toes, he thought he might ask whether it did not behove everyone who was interested in the peace and prosperity of our trade and commence to search about in every direction to see whether means could not be found if not to prevent at least to mitigate the effects of these terrible trade disputes. (Applause.) Conciliation boards had done a great deal, and must in the future do a great deal more, because it was to ignorance of facts and misconception of motives that a great deal of the accentuation of quarrels was due. In these days of keen foreign competition, when foreign nations were running us closer and closer every year, we could not afford to quarrel among ourselves. (Applause.) We had been free from many disadvantages which our foreign competition had laboured under. We had been free for many years from war, and we were free from that huge, gigantic militaryism which on the Continent was such a bar to progress and to commerce. If we wasted these advantages by internal dissensions what was the prospect before us? United we had stood high, and we stood high now; divided what might be our fall? (Hear, hear.) A danger that trade was subject to was what, to avoid using a harsher term, he would call "inaccuracy of description." (Laughter.) When he had to do with the very difficult task of fixing the classification of railway rates he learned several things about trade. He learned among other things that sometimes apricot jam was made of apples, that turtle soup was made of conger eel, and that in silk fabrics iron filings were not unknown. (Laughter.) Our trade had held its own in the markets of the world because the buyer had had confidence in the excellence of what he bought, and he thought it would be the greatest possible pity if anything were done to undermine that confidence. (Applause.) Although Acts of Parliament were passed to discourage the false marking of goods he thought that more could be done by the efforts of bodies like Chambers of Commerce to discourage what he had called inaccuracy but what some people called dishonesty than any Act of Parliament or any effort of the Board of Trade. (Hear, hear.) We were passing through, and had not yet emerged from, a period of depression, but there was no reason whatever for believing that that period of depression was permanent. (Applause.) Periods of depression had never been permanent; they had always yielded to periods of prosperity. (Hear, hear.) He saw no reason why if we avoided tricks and inaccuracy of description on the one hand and internal dissensions on the other the trade of this country should not once more leap up with a bound to a even higher position than it occupied at the present moment. (Applause.)

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PRIVILEGE TICKETS FOR RAILWAY EMPLOYEES.—A meeting of representatives of the employees of the London and North-Western, the Great Northern, and the Midland Railways was held on Friday, at the Vestry Hall, St. Pancras, to support the exchange privilege ticket movement. Alderman Athey, of the West Ham Town Council, presided, and in his opening remarks stated that the movement was initiated in April 1890, at which time there were many lines charging their employees half fares. Now, however, nearly the whole of the lines granted quarter fares to their own people on their own lines—a privilege which had been of immense benefit to railwaymen and their wives and children Mr. G. Ellis, the hon. general secretary, stated that committees in furtherance of the project had been formed, amongst other places, at Manchester and in Wales, where the system had already been adopted on two lines.—Mr. Brooks (London and North Western Railway) moved a resolution inviting the general manager of the London and North Western Railway Company to receive a deputation to discuss the advisability of adopting the interchange privilege ticket system.—Mr. Hopkins (London and North Western Railway) seconded the resolution, which was adopted without opposition.—The meeting was also addressed by delegates representing the Midland, the Great Northern, the London, Chatham, and Dover, the London and South Western, the Great Eastern, and the London, Brighton, and South Coast Railways.—A second resolution thanking the general manager of the Midland Railway for his courtesy, and expressing the hope that the directors would see their way o making similar concessions, was carried.

# RAILWAY NOTES,

## HOME, COLONIAL, AND FOREIGN.

OUR New York contemporary, *The Engineering and Mining Journal* has been dealing in a recent issue with the question of the comparative degree of personal hazard which exists in connection with mining and railway work. There is no getting away from the fact that probably the majority of people consider that miningis the most dangerous of all trades and professions. Of course no one can deny that under many conditions and circumstances mining is full of danger, while there is an element of precariousness about it almost under any circumstances, but this, like a good many other things, has been unduly exaggerated. Our contemporary has done some service in showing that after all mining has proved in America at all events to be less hazardous than railroading.

"THE circumstances surrounding the miner," says our contemporary, "his daily labour in darkness, and in narrow, confined quarters, and the apparent impossibility of escape in case of accident have strongly impressed the public mind, and this impression has been increased by the publication from time to time of accounts of disastrous accidents in which many lives were lost. For some unknown reason also a mining calamity seems to take a stronger hold on the public mind and to be remembered longer than the more frequent railroad accident; perhaps the very fact of the frequency of the latter confuses the recollection and helps to bring oblivion to the past. Only one or two mining accidents in this country have equalled in extent or in the number of victims the great catastrophes at Norwalk, at Ashtabula, at Little Silver or at Revere, or the more recent disasters at Hastings or at Battle Creek. Nevertheless, the great majority of persons, if asked whether the personal hazard were greater in mining or railroad work, would without hesitation give the bad pre-eminence to the former. This belief however, is not borne out by the facts of the case, as shown by official statistics. . . . The last report of the Interstate Commission—for the year 1891-92—gives the total number of persons employed on the railroads of the United States at 821,415, and of this number 2554 were reported killed and 28,267 injured by accident during the year. That is, one railroad employee in 322 was killed and one in 29 suffered personal injury sufficient to disable him for the time."

THERE is no authority similar to the Interstate Commission to collect such figures from the mines, but several of the States in America have mine inspectors, and to some of their reports our contemporary turns for comparison:—"In the State of Pennsylvania we find from the inspectors' report that a total of 120,972 persons employed in and about the anthracite coal mines the proportion of casualties was in 1892 one killed in 327 and one injured in 127, while of 78,235 employees in the bituminous mines one out of 592 was killed and one out of 200 injured. Nor was last year an exceptional one, for the number killed in the anthracite region for a series of years has been: 1 to 288 in 1891; 1 to 311 in 1890; 1 to 312 in 1889, and 1 to 319 in 1888, while in the bituminous mines the proportion for those years respectively was: 1 in 312; 1 in 485; 1 in 581, and 1 in 604. Again the number injured in the anthracite mines for the same years was 1 in 122; 1 in 116; 1 in 120, and 1 in 111, and in the bituminous districts 1 in 235; 1 in 177; 1 in 203, and 1 in 231." It will be seen, therefore, that the proportion of men killed in the mines was less than on the railroads; and this seems to be pretty much the case generally with the States. Of course these figures more particularly refer to metalliferous mining. Sir Edward Watkin has given it as his opinion that the safest place in the world is in an express train, just as the typical mariner prefers to go to sea for safety in times of danger than to remain on *terra firma*. Figures, it has been said, can be made to prove anything; and probably Sir Edward, if he chose, could bring forward a formidable array of statistics to prove that his dictum is correct, and that rail-roading is decidedly a less hazardous an occupation than mining.

ARRANGEMENTS will shortly be made to commence the new station at Moorgate-street, and gradually demolish the present one. According to the plans which have been prepared by Mr. G. Sherrin, Finsbury-circus (the architect), the new building will be a vast improvement on that which has been condemned. There will, says the *City Press*, be a large circulating area at the east end, surrounded by the booking offices of the various railway companies which have running powers into the station; the frontage to the street will be a handsome one, while the staircases will be rearranged and considerably widened.

REPORTED attempts have recently been made to wreck trains on the Midland line between Leeds and Bradford, and the last of these was made on Saturday night, and within a mile of the scene of the previous outrage. As the express leaving Leeds at 7·37 was approaching Apperly Bridge Station it dashed through a number of pieces of heavy wood, used for propping up hay stacks, which had been placed across the metals. The train was going at the rate of 50 miles an hour, and cut through the timber as if it had been matchwood. This makes the fourth outrage of the kind which has been committed at almost exactly the same place during the present winter. One theory is that someone whose mind is unhinged is responsible for the whole series.

AN extraordinary railway accident happened on the Midland line at Market Harborough on Monday morning. Whilst an express goods train from Liverpool to London was proceeding on its way at high speed, a roll of web machine newspaper fell off one of the trucks near Great Bowden, and got under the wheels. The wagon left the rails. The train continued its high speed for nearly two miles, dragging along the derailed truck, the wheels of which were smashing the chairs of the rails and cutting up the permanent way the whole distance. At Market Harborough Station, after a perilous journey over the London and North Western Railway viaduct was the end. The wagon came in contact with the masonry, and 21 wrecked trucks were left between the platforms after the train had ploughed its way through. The driver succeeded in stopping the front portion of the train at the Harborough South viaduct. The guard, a London man named Winchester, was severely shaken and bruised. Considerable damage was done, and traffic was delayed for nine hours.

THE Great Northern Railway Company on the 15th of last month entered into an arrangement with the Stamford and Essendine Railway Company, to take a lease of their undertaking at a fixed rental of £3000 a year for the first ten years, and thereafter at £3500 a year. The agreement, however, in detail provides that if at any time the Stamford and Essendine Company shall become part of a through line to London with the consent of the Great Northern Company, then the rental shall be increased to £5060, a year; but, on the other hand, "if a new through line to London shall be made to pass through Stamford or to take the railways of the Stamford Company, or any part thereof, without the consent and in spite of the opposition of the Great Northern," then the latter shall be entitled to terminate the agreement. The railways to which this agreement refers runs from Stamford, Lincolnshire, to Essendine, Rutlandshire, with a branch to Sibson, in Huntingdonshire,

THE accident at Hackensack Bridge, near Jersey City, on Monday, is one of the worst that has occurred for some time in America. A dense fog prevailed at the time, and on approaching the bridge over the Hackensack River, the driver of the Dover express slowed up as he could not see the lights of the signals. A local train from Orange was following close behind, the Delaware, Lackawanna and Western line being worked on the old flag plan and not the block system. The Orange train travelling at a good rate of speed crushed into the rear of the express. The dead are known to number 15. At least five, and probably 10, are so injured that they cannot survive, while a large number are suffering from hurts more or less severe. Both trains were filled with business men coming into New York for the day's work. The company's officials attribute the disaster entirely to the fog.

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STATE OF THE SKILLED LABOUR MARKET.—The following is extracted from the usual monthly memorandum communicated to the *Board of Trade Journal* by the Labour Department of the Board of Trade:—"In comparing the statistics of employment at the end of December with those for the previous month it must be borne in mind that from various seasonal causes employment is usually somewhat slack at the close of the year, and, moveover, that the Christmas holidays, which have a tendency to disturb trade for a time, have this year, in many cases, been extended beyond the usual period. It is probable, therefore, that the returns from trade societies for December afford a less accurate index than usual of changes in the labour market. Though (probably for the reasons assigned) the proportion of unemployed in the trade societies making returns has risen to some extent it is considerably lower than in the corresponding period of last year, when, partly owing to the stoppage in the cotton trade, the percentage was higher than at any period since the figures were first published in 1886. Of the 32 trade societies with an aggregate membership of 336,337 making returns, 26,452, or 7·9 per cent., are reported as in receipt of unemployed benefit at the close of December, compared with 7·3 per cent. for November. For the 26 societies however, which have made returns since May the percentage of unemployed is 8·4, compared with 7·8 per cent. for November, and with 10·2 per cent. for the 23 societies from which returns were received in December, 1892. Some slight improvement appears to have taken place in the shipbuilding industry during the month, due to some extent to the necessity for repairs arising out of the recent stormy weather. The steel and iron trades continue depressed, though scarcely so much so as last month, the termination of the Scottish coal dispute having had a beneficial effect upon the trade of that country, while in certain other districts some revival is reported. The engineering trade, notably on the Tyne, is still very depressed, the percentage of unemployed members of trade unions in this district amounting to 23·5. Taken as a whole, the percentage of unemployed in unions connected with this group of trades has risen from 12·2 to 12·4 during the month. . . . . Employment for seamen has been scarce at most of the principal ports. In some places, including the Thames and Tyne, there has been a falling off in the employment of dock and riverside labour during the month, but at Cardiff such work has been steady, and at Liverpool and Glasgow an improvement is reported. Of the 32 societies making returns, six describe trade as "good" and 26 as "bad," though a more hopeful tone pervades many of these reports than has been the case for some months past. The number of fresh disputes that have arisen during the month is smaller than in any previous month of the year, being 24, compared with 35 in November and 24 in December, 1892. Of these, eight occurred in the textile trades, five in the mining industry, three in the metal trades, three in connection with dock labour, two in the building trades, and the remaining three in other industries. None of these disputes has been of an important character, and the numbers affected have in no case been large. Particulars obtained with respect to 16 disputes show that the numbers concerned only amounted to 2171."

THE MINING MANUAL.—The sixth edition of the "Mining Manual" has just made its appearance and is as complete and accurate as usual. All the special features which characterised previous issues of the work have been retained, and there are large and important additions. Of these the most noteworthy is a list of the principle coal and iron companies registered in the United Kingdom. It is indicative of the scale of the work which Mr. W. R. Skinner has undertaken that these additions comprise more than 200 companies, with a capital of close upon £55,000,000. There can be no doubt that this publication is regarded by the majority of mining men as being the authoritative work of its kind. While its scope is necessarily restricted to the supplying of information to the investor in mines, this ground is covered with a thoroughness and completeness which could hardly be exceeded. Prefacing the manual is a short, pithy sketch of the past year's trade, which may be regarded as an admirable illustration of the *multum in parvo*. For instance: "Since the publication of the last volume of the 'Mining Manual' hardly any new metalliferous mining enterprises have been submitted to the notice of the British public. Speculation has been almost entirely absent. No favourable features in the mining industry have been developed outside of the Transvaal. There, however, the Witwatersrand mines have continued steadily to increase the importance of their aggregate output of gold." The editor then goes on to deal in a similarly succinct style with the various metals, especially enlarging upon the silver difficulty which has had such a depressing effect upon American mining during the year. It is a needless task to recommend the "Mining Manual" to the attention of mining professional men generally, the large majority of whom have doubtless learned its sterling value as a work of reference, encyclopedic in its comprehensiveness, accurate in detail, and convenient in form.

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**LONDON: JANUARY 20, 1894.**

## THE POSITION OF FOREIGN RAILWAYS.

THE railway interest has latterly had to succumb to a great many economic evils, under which the railway companies have found themselves absolutely helpless. In all classes of foreign stock there has been a temporary depression that seemed at one time to offer very little loop-hole for recovery. British investors have left them severely alone, with the result that foreign rails are now considered to be a very undesirable form of investment. But when things are at their worst they begin to mend, and during a time of depression those who are able to exercise any influence over these securities begin to think of various expedients for improving the outlook. With respect to American rails, which have been especially affected by economic disturbances, the present absence of activity in speculation is due primarily to the want of confidence that exists between the shareholders and the directors. These latter, too, often think that the public is a disunited and powerless body, which comes together at stated intervals to badger the directorate, and goes away half appeased by the sophisms and platitudes of an astute Chairman. What passes behind the scenes is very often a mystery, and is only revealed by some indiscretion that puts the company into awkward straits. This consciousness that they are not in the full confidence of the directorate has done a great deal towards alienating shareholders from the American railway concerns, and unless fresh capital is forthcoming to assist in the development of the railways the manœuvres of the directors will have been in vain. For the same reason, the formation of "trusts" among the railway companies has done an enormous amount of harm, as the shareholders cannot help seeing that such combinations are brought about entirely in the interests of the great financial magnates, while they themselves have to run the risk of failure without the prospect of proportionate gain. The experience of the coal "trusts," in which all the companies seem to be at discord, should be sufficiently convincing to prove the ineffectiveness of any such speculative movement. If these "trusts" were to come to an end there is no doubt that the railway interest would be materially benefited, for in the present state of finance investors will not dabble in securities that offer so many possibilities of collapse. At the present moment the American railway managers certainly do see the expediency of adopting a more liberal and open policy, and many of them are seeking to secure the confidence of investors by carrying out reforms which cannot but greatly assist in advancing their interests. These reforms have been made necessary by the enormous contraction of receipts upon nearly all the railways. The trunk lines have, for instance, been hard hit by the comparative failure of the Chicago Exhibition. No doubt the receipts upon these lines have been largely in excess of the normal revenue, but this does not make up for the costly works that had been carried out with a view of coping with the anticipated traffic. Many of these works are positively useless now that the World's Fair is at an end, as they can be no longer turned to account. The situation is further complicated by threatened judicial proceedings between the railway companies and the municipality of Chicago, in which each one claims heavy damages of the other upon the ground that the heavy transport charges and the high cost of living frightened visitors away from the Pork City It is evident from this that the World's Fair has not very materially improved the position of the railway companies.

While these minor causes of depression are likely to be met by a more economical system of railway management the American companies have to face other drawbacks that are quite beyond their control. The contraction of trade that has taken place under the régime of the MCKINLEY Bill is reflected in the lessened receipts upon all the railways throughout the country. When this measure came into force the imports of foreign merchandise and produce dropped suddenly, to the satisfaction, no doubt, of those Protectionists who looked upon this exclusion of European goods as a guarantee for the prosperity of the home industries. But if European countries cannot sell their produce to the United States they cannot take back United States products in return. The promoters of the measure had overlooked the fact that international trade is a trade of exchange, and that it can be carried on in no other way. Consequently the exports from the United States declined to a corresponding degree, the home industries soon found themselves in want of orders, and the national revenue, instead of augmenting with the high duties, underwent a serious diminution, which was accentuated by the silver crisis. Now that the fallacy of the MCKINLEY Bill has been brought home to the United States economists with practical effect the question of its repeal is being tardily considered. Unfortunately, a great many difficulties will have to be encountered before this desirable step is taken. The tariffs cannot be lowered until the finances of the country are put upon a sounder basis, as any possible decline of revenue from a reduction of the existing high import duties would be sure to meet with strenuous opposition. In point of fact, it seems more reasonable to anticipate that the lowering of the tariffs, by facilitating imports and encouraging the home industries, would allow of a considerable addition of revenue to the Treasury. Nevertheless, it is proposed to take other steps for the readjustment of the United States finances, in order that it may be possible to reduce the tariffs without causing any further loss of revenue. The contraction of receipts during the past fiscal year has been so enormous that the deficit is estimated at fifty million dollars, and it is proposed to make up for this by issuing short term bonds at a low rate of interest. Should this financial expedient prove successful we may anticipate an early repeal of the MCKINLEY Act, as public opinion in the United States is certainly tending more and more in this direction. Until this is done it cannot be expected that the American Railways will experience any perceptible revival. But when foreign trade begins once more to develop the railways will be among the first to benefit from the recovery. So far, therefore, as the future is concerned holders of American bonds have no cause for any misgiving, and when the present high import tariffs are in a fair way of being reduced these securities will certainly attract a great deal of attention as a source of investment. In other parts of the American continent the outlook for the railway interest is also a very satisfactory one. The new branch lines that are being laid down to tap the mineral riches of Canada will add materially to the revenue of the trunk railways, while in the South American States, notably in Bolivia where the Government has sanctioned the building of a large network of lines, the railway system is about to be largely extended. It is not likely yet awhile that much activity will be shown in the construction of new railways in Argentina, but those already in existence will be greatly benefited when the guarantee question is settled. In every way the Governments of the different American States are seeking to put their finances in order, and

when this is done there is sure to be a brisker demand for all classes of railway scrip.

The financial crises in Australia have affected the railways probably more than any other industrial interest. Yet the railways have now almost entirely recovered from the collapse, and with the carrying out of important works in aid of the agricultural and mining industries the position of the Australian railways is likely to still further improve. So far it has not been possible to say anything very encouraging concerning the railway systems in most of the colonies of the island continent. In their management there has been an almost total disregard for economy, and some of the Governments have gone to considerable expense in trying to secure rails and rolling stock from the colonial mills and workshops. Their failure in this effort will probably be followed by the adoption of a more economical policy, and by the purchase of railway material in the cheapest market. Even a Government cannot afford to be wasteful in its expenditure upon the railways, seeing that the funds are supplied entirely by the taxpayers, who can scarcely be expected to look with equanimity upon the heavy profits secured by native manufacturers at their expense. By adopting a policy of retrenchment it is evident that the colonial Governments will be in a much better position to extend their railway systems than they have been in the past, and they will be able to do this by the revived feeling of confidence that has manifested itself both in the colonies and in the mother country. British investors are, indeed, quite ready to respond to any demand for Australian loans, and it is expected that such loans will be very shortly asked for. With trade improving and new districts being opened up there ought to be abundant scope for the expenditure of some part of this money upon new railways, by which, alone, it is possible to take full advantage of the inexhaustible resources of the colony. In South Africa also there is an enormous scope for the construction of railways which, in the course of a few years, will doubtless be carried out with considerable energy. The magnificent yield of gold upon the Rand during the past year affords ample proof of the possibilities in this direction, for once the gold mining industry has extended into the possessions of the British South Africa Company it will require a complete system of railways to enable it to be carried out upon an extensive scale. The basis of this system will be provided by the Cape Railway and the Beira line, while communication with the West Coast may be afforded eventually by the laying down of a line to Walfish Bay. With so much activity likely to take place in railway construction in the future, the prospects of manufacturers of railway material are very satisfactory. For a long time past they have had to complain of a falling away in the export demand for railway material, but there is every reason to believe that at no distant date the foreign requirements in this material will very largely increase, especially in view of the fact that the Continental makers are already active upon rails and rolling stock destined for new lines that are to be constructed in their respective countries. This enterprise abroad should exercise a very beneficial influence upon the industry at home. From the investor's point of view the outlook is no less encouraging, and if industry and finance during the present year should be free from any serious labour or economic crisis the holders of American and other foreign railway scrip should secure more profitable dividends.

## HOME GOLD MINING V. SOUTH AFRICAN: A COMPARISON.

IN the course of a number of interviews published in the columns of this Journal during 1893, on "Home Mining," several of the gentlemen whom we had the privilege of interrogating while doubting whether British copper and lead mining would ever revive, expressed a favourable opinion of Cornish tin mining, and a few thought there was a possible future before gold in Wales. A question asked by Mr. MOLLOY in the House of Commons last week has revived interest in the subject of gold in Wales, and elicited a reply that reveals a state of things which only those closely acquainted with Welsh gold mining have knowledge of. The Government returns relative to the industry support and confirm the views of those who hinted at a possible future of encouraging results from Welsh gold mines. According to Sir JOHN HIBBERT 43,600 tons mined and crushed during the last few years have yielded 23,716 ounces of gold, or an average of nearly 11 dwts. to the ton, a return far in excess of that of most goldfields, not excepting the great goldfield of South Africa, whose phenomenal monthly output has centred the attention of gold mining investors almost exclusively upon itself. We have always expressed our desire for the welfare of British gold mining, and from time to time the results have shown that not only our desires but our anticipations may some time be realised. We are aware that large sums of money have been spent in Wales, and we do not hesitate to assert that some of it has not been well spent. If there have been extravagancies, and perhaps unnecessary expenditure, which is the opinion of many practical men, the explanation is that some of those associated with Welsh gold mining and having its control did not possess that knowledge and experience which is necessary to ensure economical working. The Financial Secretary to the Treasury said he did not know the returns of South Africa, but if he had made a comparison between South Africa and Wales he would probably have come to the conclusion that, in view of the returns, something ought to be done to open up the large areas of Crown lands in Wales which are known to working miners to be auriferous, as suggested by Mr. MOLLOY's question.

We have before us the Chamber of Mines Returns for the 54 principal mines of Witwatersrandt. During the month of October the average mill production was 9 dwts. 20 grains, upon 201,141 tons which were milled during the month. The average value is £1 12s. 11d. per ton. The gold is taken at £3 10s. per ounce for mill gold. The number of tons of tailings treated for the month was 123,513. Taking the tailings treated as having come from the ore mined during the month—the most favourable view—we have a value of ore and tailings treated by the cyanide process of £2 9s. 5d. per ton. The cost of mining and milling is estimated by competent authorities at £1 10s. per ton, but if we include the cost of treating the tailings in South Africa the cost must be at least £1 9s. 5d. per ton for mining, milling, treatment of tailings and administration. These figures, we think, most authorities in South Africa will admit. That would leave a profit on each ton treated of not more than £1. The enormous return on the Randt is due, not to the richness of the ore treated, but to the immense output which is made possible by the enormous capital at command, together with the ease the ore can be crushed. The ore treated of late years in Wales, as stated previously, shows an average result of 11 dwts. per ton. The value of this gold is practically identical with that of South Africa, viz., £3 10s. per ounce or 3s. 6d. per dwt,; 11 dwts. at 3s. 6d., £1 18s. 6d. The ore is treated in Wales by water-power; the lodes are large, and now that royalties are reduced 13s. 6d. should more than pay the cost of mining, milling, treatment, royalties, and administration. The average of one mine in Wales has for some time past, when in full operation, been for mining, milling, and treating 7s. 5½d. per ton.

Taking, however, the figures we have adopted, and allowing 13s. 6d. per ton for mining and treatment and charges, there should be, with economical management, a net profit in Wales on past returns 25s. per ton, or 25 per cent. over the average of South Africa. Let us take one typical mine of South Africa—the Langlaagte Estate. In October last they treated 21,877 tons of ore at their mill, which has 150 head of stamps—the largest mill at Witwatersrand. Their mill produce per ton is 6·35 dwts. of the value of £1 2s. 3d. Their tailings produced 3·59 dwts. of the value of 10s. per ton, and that is giving them credit for having saved 18,480 tons of tailings out of 21,877 tons of ore. Some of these must necessarily have been old tailings. The total value of their ore is £1 13s. The market value of that mine to-day is £1,788,000. We are not depreciating the Langlaagte property. It is no doubt worth the price it commands in the English market; that is not our point. We are making a comparison of their returns with the returns of Wales, and we find that as against £1 13s. as the value of the Langlaagte ore, £1 18s. 6d. is the value of the Welsh ore, and that the cost of mining and milling in Wales cannot be half what it is at the Langlaagte Estate Mine. Why, in the name of common sense do not the Government open the Crown lands of Wales containing auriferous lodes to the working miners, and allow them to be prospected, as suggested by Mr. MOLLOY's question in the House of Commons? Employment for labour is scarce in Wales; labour is abundant, and we hope that there is money left in England yet to open up the natural resources of our islands, notwithstanding the fact that we have sent so much money abroad to open up the resources of other countries, whose right to the legitimate absorption of British capital we should be the last to dispute.

# NOTES AND COMMENTS.

ANOTHER dull week! Such is the sum total of what is to be said regarding the net result of the week's business in the City. The first Stock Exchange Settlement for the year gave rise to a certain amount of activity, which, however, was rather of a negative than of a positive character. At the same time, the Settlement was looked forward to with considerable interest, though, to be sure, no one expected any considerable increase of business to be made manifest, and consequently no one was disappointed at the result. It must be admitted, though, that, if it did nothing else, the Settlement kept the investment brokers fairly busy, for investment orders have been looking up somewhat for a little time past, but anything approaching to appreciable activity in speculation has been wanting. Money has continued to be cheap, and the general tone of the markets led most people to expect that a reduction in the Bank official minimum rate of discount would be made at the meeting of directors on Thursday. But the directors stuck to their 3 per cent., and there will, no doubt, be weeping and wailing and gnashing of teeth in many dissatisfied quarters.

SEVERAL of the more important amongst the London banks have been holding their annual meetings during the week. These were looked forward to rather in city circles as it was expected that the Chairmen would have something to say, either encouraging or the reverse, with regard to the condition of trade and finance. It must be admitted that the speeches were, at best, but doleful. Mr. Dobree, the Chairman of the London and Westminster Bank, gave a dismal but accurate recapitulation of the period of depression which we have been passing through. The severity of the crisis has been, he said, contributed to mainly by three important events: (1) The great coal strike, which effected almost every branch of trade in the country and especially the railways; (2) the banking failures in Australia which had involved thousands in ruin, and (3) the railway and banking crisis in America, which had been very sharp, resulting in five important railways placing their affairs in the hands of receivers. "Look where we will," he said, "we find not only financial but social troubles. Spain, Portugal, and Greece are almost bankrupt; while the state of affairs in Italy is deplorable, and in the rich country of Brazil matters are in a state of uncertainty. If we look at our own country there is a deficiency of two million pounds, and this in the face of the increased maintenance of the Navy, which I hope will be heartily supported, must strike dismay into the heart of the Chancellor of the Exchequer. . . . Affairs generally are in a very fidgety state, which is shown by the enormous shrinkage in the various trades of the country, as indicated by the returns of the Clearing House. In 1890 the figures were £7,801,000,000, and in 1893 they were £6,478,000,000, being a loss of £1,323,000,000." Certainly this is a shrinkage indeed; and perhaps Mr. Dobree acted wisely in just showing what the position is at present. There is no need, however, for undue alarm or panic. Cool-headedness will be found to be the best specific pending the time when things will settle down, and gradually, in obedience to economic laws, pull themselves together for an appreciable revival.

AT the meeting of the Union Bank, the Right Hon. Ritchie, M.P., who presided, reflected pretty much what Mr. Dobree said at the London and Westminster meeting. He referred pointedly, however, to the question of the Baring guarantee, which sticks like a lump in so many people's throats. Going into figures, he said he could tell his hearers on the highest authority that the position of the Baring account was improving; that the debt to the Bank was declining; and that the value of the assets was increasing. As to the prospects of the current year, he had no encouragement to offer. "I see," he said, "no signs of a return of that commercial prosperity we all hope for and desire. I cannot honestly say there is at present any appearance of prosperity." A dismal outlook, truly! But is not Mr. Ritchie just a trifle pessimistic?

IT is satisfactory to know that two Departmental Committees, much and long wanted, have been appointed by the Home Secretary to consider the form in which the Mining Statistics of the United Kingdom and the statistics relating to factories and workshops are at present issued by the Home Office, and to submit to him recommendations for their improvement. It is really high time that these committees were appointed, because the manner in which the Mining Statistics of the United Kingdom have hitherto been presented, leave, in the opinion of most persons whom they chiefly concern, very much to be desired. The committee on Mining Statistics is to consist of Mr. Hunter, M.P.; Professor C. Le Neve Foster, Mr. W. B. Scott, H.M. Inspectors of Mines, and Mr. J. B. Jordan, of the Home Office. The *personnel* of the committee will be generally regarded as adequate, and all we hope for now is that the committee's recomdations will be forthcoming with a greater degree of promptitude than is ordinarily characteristic of the average Departmental Committee.

*Apropos* of the question of the position of trade at the present moment, a speech delivered by Sir Courtenay Boyle, Permanent Secretary to the Board of Trade, at a conversazione of the Bradford Chamber of Commerce, on Tuesday, contains one or two remarks which are worthy of consideration. He stated that the Labour Department of the Board of Trade had reported to him that during 1893 there were no less than 635 trade disputes, three of these assumed large proportions; and one, Sir Courtenay considered, was probably the most dire in its effects known for many generations. He considered that conciliation boards had done a good work in the right direction, and wisely considered that a great deal of the accentuation of quarrels was due to the ignorance of facts and misconception of motives by the opposing parties. "Surely," he said, "in these days of keen foreign competition, when nations are running us closer and closer, we cannot afford to quarrel amongst ourselves." That is precisely what we have urged over and over again in these columns, but the nail takes a lot of hammering home. With a vein of sarcastic humour, Sir C. Boyle pointed out that there was a tendency to give undue credit to joint-stock companies, some of which were intended to only produce shares, and nothing else. This certainly is a point which will sooner or later require renewed legislative supervision.

THEN Sir Courtenay went on to refer to the classification of railway rates, and said that he had become aware that "apricot jam" was made of apples, "turtle soup" of conger eel, and that even in "silk fabrics" iron filings were not unknown. Perhaps Sir Courtenay might have made his list more complete had he added to his list the salting of mines, at which at different times a lucrative and extensive trade is done by persons of ingenious and unscrupulous mental proclivities. On the whole, however, the Permanent Secretary of the Board of Trade was right in assuming that our trade holds "its mark in the world" because the buyer has generally confidence in the articles which he bought from us; and passing on to a consideration of the wave of depression through which we are passing at present, he was less pessimistic than most of his contemporaries are. He saw no reason, he said, for believing that the period of depression was likely to be permanent. Such periods depression, he pointed out, never had been permanent; they always had yielded to periods of prosperity. He saw no reason, if we avoided tricks and inaccuracies on one hand, and internal dissension on the other, why the trade of this country should not once more leap up with a bound to an even higher position than it occupied at the present moment. It is gratifying to find that the views we have so long expressed are emphasised in such a pertinent fashion by an undoubted authority like Sir Courtenay Boyle.

IT was quite to be expected that the opening of the Manchester Ship Canal would lead to pronounced rivalry between the two great trading centres of Liverpool and Manchester. It is just a pity that the leading Manchester bodies did not wake up to the exigencies of the times a few years earlier. Probably had they done so the Manchester Ship Canal would never have been constructed. But Liverpool has been backward and ultra-conservative in its business administration, while Manchester has been vigorous and enterprising. Many complaints have been made as to the pronounced supineness of the Mersey Docks and Harbour Board and other commercial bodies. Their policy has been one of waiting and watching, rather than of seizing time by

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**LONDON: JANUARY 20, 1894.**

## THE POSITION OF FOREIGN RAILWAYS.

THE railway interest has latterly had to succumb to a great many economic evils, under which the railway companies have found themselves absolutely helpless. In all classes of foreign stock there has been a temporary depression that seemed at one time to offer very little loop-hole for recovery. British investors have left them severely alone, with the result that foreign rails are now considered to be a very undesirable form of investment. But when things are at their worst they begin to mend, and during a time of depression those who are able to exercise any influence over these securities begin to think of various expedients for improving the outlook. With respect to American rails, which have been especially affected by economic disturbances, the present absence of activity in speculation is due primarily to the want of confidence that exists between the shareholders and the directors. These latter, too, often think that the public is a disunited and powerless body, which comes together at stated intervals to badger the directorate, and goes away half appeased by the sophisms and platitudes of an astute Chairman. What passes behind the scenes is very often a mystery, and is only revealed by some indiscretion that puts the company into awkward straits. This consciousness that they are not in the full confidence of the directorate has done a great deal towards alienating shareholders from the American railway concerns, and unless fresh capital is forthcoming to assist in the development of the railways the manœuvres of the directors will have been in vain. For the same reason, the formation of "trusts" among the railway companies has done an enormous amount of harm, as the shareholders cannot help seeing that such combinations are brought about entirely in the interests of the great financial magnates, while they themselves have to run the risk of failure without the prospect of proportionate gain. The experience of the coal "trusts," in which all the companies seem to be at discord, should be sufficiently convincing to prove the ineffectiveness of any such speculative movement. If these "trusts" were to come to an end there is no doubt that the railway interest would be materially benefited, for in the present state of finance investors will not dabble in securities that offer so many possibilities of collapse. At the present moment the American railway managers certainly do see the expediency of adopting a more liberal and open policy, and many of them are seeking to secure the confidence of investors by carrying out reforms which cannot but greatly assist in advancing their interests. These reforms have been made necessary by the enormous contraction of receipts upon nearly all the railways. The trunk lines have, for instance, been hard hit by the comparative failure of the Chicago Exhibition. No doubt the receipts upon these lines have been largely in excess of the normal revenue, but this does not make up for the costly works that had been carried out with a view of coping with the anticipated traffic. Many of these works are positively useless now that the World's Fair is at an end, as they can be no longer turned to account. The situation is further complicated by threatened judicial proceedings between the railway companies and the municipality of Chicago, in which each one claims heavy damages of the other upon the ground that the heavy transport charges and the high cost of living frightened visitors away from the Pork City It is evident from this that the World's Fair has not very materially improved the position of the railway companies.

While these minor causes of depression are likely to be met by a more economical system of railway management the American companies have to face other drawbacks that are quite beyond their control. The contraction of trade that has taken place under the régime of the MCKINLEY Bill is reflected in the lessened receipts upon all the railways throughout the country. When this measure came into force the imports of foreign merchandise and produce dropped suddenly, to the satisfaction, no doubt, of those Protectionists who looked upon this exclusion of European goods as a guarantee for the prosperity of the home industries. But if European countries cannot sell their produce to the United States they cannot take back United States products in return. The promoters of the measure had overlooked the fact that international trade is a trade of exchange, and that it can be carried on in no other way. Consequently the exports from the United States declined to a corresponding degree, the home industries soon found themselves in want of orders, and the national revenue, instead of augmenting with the high duties, underwent a serious diminution, which was accentuated by the silver crisis. Now that the fallacy of the MCKINLEY Bill has been brought home to the United States economists with practical effect the question of its repeal is being tardily considered. Unfortunately, a great many difficulties will have to be encountered before this desirable step is taken. The tariffs cannot be lowered until the finances of the country are put upon a sounder basis, as any possible decline of revenue from a reduction of the existing high import duties would be sure to meet with strenuous opposition. In point of fact, it seems more reasonable to anticipate that the lowering of the tariffs, by facilitating imports and encouraging the home industries, would allow of a considerable addition of revenue to the Treasury. Nevertheless, it is proposed to take other steps for the readjustment of the United States finances, in order that it may be possible to reduce the tariffs without causing any further loss of revenue. The contraction of receipts during the past fiscal year has been so enormous that the deficit is estimated at fifty million dollars, and it is proposed to make up for this by issuing short term bonds at a low rate of interest. Should this financial expedient prove successful we may anticipate an early repeal of the MCKINLEY Act, as public opinion in the United States is certainly tending more and more in this direction. Until this is done it cannot be expected that the American Railways will experience any perceptible revival. But when foreign trade begins once more to develop the railways will be among the first to benefit from the recovery. So far, therefore, as the future is concerned holders of American bonds have no cause for any misgiving, and when the present high import tariffs are in a fair way of being reduced these securities will certainly attract a great deal of attention as a source of investment. In other parts of the American continent the outlook for the railway interest is also a very satisfactory one. The new branch lines that are being laid down to tap the mineral riches of Canada will add materially to the revenue of the trunk railways, while in the South American States, notably in Bolivia where the Government has sanctioned the building of a large network of lines, the railway system is about to be largely extended. It is not likely yet awhile that much activity will be shown in the construction of new railways in Argentina, but those already in existence will be greatly benefited when the guarantee question is settled. In every way the Governments of the different American States are seeking to put their finances in order, and

when this is done there is sure to be a brisker demand for all classes of railway scrip.

The financial crises in Australia have affected the railways probably more than any other industrial interest. Yet the railways have now almost entirely recovered from the collapse, and with the carrying out of important works in aid of the agricultural and mining industries the position of the Australian railways is likely to still further improve. So far it has not been possible to say anything very encouraging concerning the railway systems in most of the colonies of the island continent. In their management there has been an almost total disregard for economy, and some of the Governments have gone to considerable expense in trying to secure rails and rolling stock from the colonial mills and workshops. Their failure in this effort will probably be followed by the adoption of a more economical policy, and by the purchase of railway material in the cheapest market. Even a Government cannot afford to be wasteful in its expenditure upon the railways, seeing that the funds are supplied entirely by the taxpayers, who can scarcely be expected to look with equanimity upon the heavy profits secured by native manufacturers at their expense. By adopting a policy of retrenchment it is evident that the colonial Governments will be in a much better position to extend their railway systems than they have been in the past, and they will be able to do this by the revived feeling of confidence that has manifested itself both in the colonies and in the mother country. British investors are, indeed, quite ready to respond to any demand for Australian loans, and it is expected that such loans will be very shortly asked for. With trade improving and new districts being opened up there ought to be abundant scope for the expenditure of some part of this money upon new railways, by which, alone, it is possible to take full advantage of the inexhaustible resources of the colony. In South Africa also there is an enormous scope for the construction of railways which, in the course of a few years, will doubtless be carried out with considerable energy. The magnificent yield of gold upon the Rand during the past year affords ample proof of the possibilities in this direction, for once the gold mining industry has extended into the possessions of the British South Africa Company it will require a complete system of railways to enable it to be carried out upon an extensive scale. The basis of this system will be provided by the Cape Railway and the Beira line, while communication with the West Coast may be afforded eventually by the laying down of a line to Walfish Bay. With so much activity likely to take place in railway construction in the future, the prospects of manufacturers of railway material are very satisfactory. For a long time past they have had to complain of a falling away in the export demand for railway material, but there is every reason to believe that at no distant date the foreign requirements in this material will very largely increase, especially in view of the fact that the Continental makers are already active upon rails and rolling stock destined for new lines that are to be constructed in their respective countries. This enterprise abroad should exercise a very beneficial influence upon the industry at home. From the investor's point of view the outlook is no less encouraging, and if industry and finance during the present year should be free from any serious labour or economic crisis the holders of American and other foreign railway scrip should secure more profitable dividends.

## HOME GOLD MINING V. SOUTH AFRICAN: A COMPARISON.

IN the course of a number of interviews published in the columns of this Journal during 1893, on "Home Mining," several of the gentlemen whom we had the privilege of interrogating while doubting whether British copper and lead mining would ever revive, expressed a favourable opinion of Cornish tin mining, and a few thought there was a possible future before gold in Wales. A question asked by Mr. MOLLOY in the House of Commons last week has revived interest in the subject of gold in Wales, and elicited a reply that reveals a state of things which only those closely acquainted with Welsh gold mining have knowledge of. The Government returns relative to the industry support and confirm the views of those who hinted at a possible future of encouraging results from Welsh gold mines. According to Sir JOHN HIBBERT 43,600 tons mined and crushed during the last few years have yielded 23,716 ounces of gold, or an average of nearly 11 dwts. to the ton, a return far in excess of that of most goldfields, not excepting the great goldfield of South Africa, whose phenomenal monthly output has centred the attention of gold mining investors almost exclusively upon itself. We have always expressed our desire for the welfare of British gold mining, and from time to time the results have shown that not only our desires but our anticipations may some time be realised. We are aware that large sums of money have been spent in Wales, and we do not hesitate to assert that some of it has not been well spent. If there have been extravagancies, and perhaps unnecessary expenditure, which is the opinion of many practical men, the explanation is that some of those associated with Welsh gold mining and having its control did not possess that knowledge and experience which is necessary to ensure economical working. The Financial Secretary to the Treasury said he did not know the returns of South Africa, but if he had made a comparison between South Africa and Wales he would probably have come to the conclusion that, in view of the returns, something ought to be done to open up the large areas of Crown lands in Wales which are known to working miners to be auriferous, as suggested by Mr. MOLLOY'S question.

We have before us the Chamber of Mines Returns for the 54 principal mines of Witwatersrandt. During the month of October the average mill production was 9 dwts. 20 grains, upon 201,141 tons which w milled during the month. The average value is £1 12s. 11d. per ton. The gold is taken at £3 10s. per ounce for mill gold. The number of tons of tailings treated for the month was 123,513. Taking the tailings treated as having come from the ore mined during the month—the most favourable view—we have a value of ore and tailings treated by the cyanide process of £2 9s. 5d. per ton. The cost of mining and milling is estimated by competent authorities at £1 10s. per ton, but if we include the cost of treating the tailings in South Africa the cost must be at least £1 9s. 5d. per ton for mining, milling, treatment of tailings and administration. These figures, we think, most authorities in South Africa will admit. That would leave a profit on each ton treated of not more than £1. The enormous return on the Randt is due, not to the richness of the ore treated, but to the immense output which is made possible by the enormous capital at command, together with the ease the ore can be crushed. The ore treated of late years in Wales, as stated previously, shows an average result of 11 dwts. per ton. The value of this gold is practically identical with that of South Africa, viz., £3 10s. per ounce or 3s. 6d. per dwt,; 11 dwts. at 3s. 6d., £1 18s. 6d. The ore is treated in Wales by water-power; the lodes are large, and now that royalties are reduced 13s. 6d. should more than pay the cost of mining, milling, treatment, royalties, and administration. The average of one mine in Wales has for some time past, when in full operation, been for mining, milling, and treating 7s. 5½d. per ton.

Taking, however, the figures we have adopted, and allowing 13s. 6d. per ton for mining and treatment and charges, there should be, with economical management, a net profit in Wales on past returns 25s. per ton, or 25 per cent. over the average of South Africa. Let us take one typical mine of South Africa—the Langlaagte Estate. In October last they treated 21,877 tons of ore at their mill, which has 150 head of stamps—the largest mill at Witwatersrand. Their mill produce per ton is 6·35 dwts. of the value of £1 2s. 3d. Their tailings produced 3·59 dwts. of the value of 10s. per ton, and that is giving them credit for having saved 18,480 tons of tailings out of 21,877 tons of ore. Some of these must necessarily have been old tailings. The total value of their ore is £1 13s. The market value of that mine to-day is £1,788,000. We are not depreciating the Langlaagte property. It is no doubt worth the price it commands in the English market; that is not our point. We are making a comparison of their returns with the returns of Wales, and we find that as against £1 13s. as the value of the Langlaagte ore, £1 18s. 6d. is the value of the Welsh ore, and that the cost of mining and milling in Wales cannot be half what it is at the Langlaagte Estate Mine. Why, in the name of common sense do not the Government open the Crown lands of Wales containing auriferous lodes to the working miners, and allow them to be prospected, as suggested by Mr. MOLLOY'S question in the House of Commons? Employment for labour is scarce in Wales; labour is abundant, and we hope that there is money left in England yet to open up the natural resources of our islands, notwithstanding the fact that we have sent so much money abroad to open up the resources of other countries, whose right to the legitimate absorption of British capital we should be the last to dispute.

# NOTES AND COMMENTS.

ANOTHER dull week! Such is the sum total of what is to be said regarding the net result of the week's business in the City. The first Stock Exchange Settlement for the year gave rise to a certain amount of activity, which, however, was rather of a negative than of a positive character. At the same time, the Settlement was looked forward to with considerable interest, though, to be sure, no one expected any considerable increase of business to be made manifest, and consequently no one was disappointed at the result. It must be admitted, though, that, if it did nothing else, the Settlement kept the investment brokers fairly busy, for investment orders have been looking up somewhat for a little time past, but anything approaching to appreciable activity in speculation has been wanting. Money has continued to be cheap, and the general tone of the markets led most people to expect that a reduction in the Bank official minimum rate of discount would be made at the meeting of directors on Thursday. But the directors stuck to their 3 per cent., and there will, no doubt, be weeping and wailing and gnashing of teeth in many dissatisfied quarters.

SEVERAL of the more important amongst the London banks have been holding their annual meetings during the week. These were looked forward to rather in city circles as it was expected that the Chairmen would have something to say, either encouraging or the reverse, with regard to the condition of trade and finance. It must be admitted that the speeches were, at best, but doleful. Mr. Dobree, the Chairman of the London and Westminster Bank, gave a dismal but accurate recapitulation of the period of depression which we have been passing through. The severity of the crisis has been, he said, contributed to mainly by three important events: (1) The great coal strike, which effected almost every branch of trade in the country and especially the railways; (2) the banking failures in Australia, which had involved thousands in ruin, and (3) the railway and banking crisis in America, which had been very sharp, resulting in five important railways placing their affairs in the hands of receivers. "Look where we will," he said, "we find not only financial but social troubles. Spain, Portugal, and Greece are almost bankrupt; while the state of affairs in Italy is deplorable, and in the rich country of Brazil matters are in a state of uncertainty. If we look at our own country there is a deficiency of two million pounds, and this in the face of the increased maintenance of the Navy, which I hope will be heartily supported, must strike dismay into the heart of the Chancellor of the Exchequer. . . . Affairs generally are in a very fidgety state, which is shown by the enormous shrinkage in the various trades of the country, as indicated by the returns of the Clearing House. In 1890 the figures were £7,801,000,000, and in 1893 they were £6,478,000,000, being a loss of £1,323,000,000." Certainly this is a shrinkage indeed; and perhaps Mr. Dobree acted wisely in just showing what the position is at present. There is no need, however, for undue alarm or panic. Cool-headedness will be found to be the best specific pending the time when things will settle down, and gradually, in obedience to economic laws, pull themselves together for an appreciable revival.

AT the meeting of the Union Bank, the Right Hon. Ritchie, M.P., who presided, reflected pretty much what Mr. Dobree said at the London and Westminster meeting. He referred pointedly, however, to the question of the Baring guarantee, which sticks like a lump in so many people's throats. Going into figures, he said he could tell his hearers on the highest authority that the position of the Baring account was improving; that the debt to the Bank was declining; and that the value of the assets was increasing. As to the prospects of the current year, he had no encouragement to offer. "I see," he said, "no signs of a return of that commercial prosperity we all hope for and desire. I cannot honestly say there is at present any appearance of prosperity." A dismal outlook, truly! But is not Mr. Ritchie just a trifle pessimistic?

IT is satisfactory to know that two Departmental Committees, much and long wanted, have been appointed by the Home Secretary to consider the form in which the Mining Statistics of the United Kingdom and the statistics relating to factories and workshops are at present issued by the Home Office, and to submit to him recommendations for their improvement. It is really high time that these committees were appointed, because the manner in which the Mining Statistics of the United Kingdom have hitherto been presented, leave, in the opinion of most persons whom they chiefly concern, very much to be desired. The committee on Mining Statistics is to consist of Mr. Hunter, M.P.; Professor C. Le Neve Foster, Mr. W. B. Scott, H.M. Inspectors of Mines, and Mr. J. B. Jordan, of the Home Office. The *personnel* of the committee will be generally regarded as adequate, and all we hope for now is that the committee's recommdations will be forthcoming with a greater degree of promptitude than is ordinarily characteristic of the average Departmental Committee.

*Apropos* of the question of the position of trade at the present moment, a speech delivered by Sir Courtenay Boyle, Permanent Secretary to the Board of Trade, at a conversazione of the Bradford Chamber of Commerce, on Tuesday, contains one or two remarks which are worthy of consideration. He stated that the Labour Department of the Board of Trade had reported to him that during 1893 there were no less than 635 trade disputes, three of these assumed large proportions; and one, Sir Courtenay considered, was probably the most dire in its effects known for many generations. He considered that conciliation boards had done a good work in the right direction, and wisely considered that a great deal of the accentuation of quarrels was due to the ignorance of facts and misconception of motives by the opposing parties. "Surely," he said, "in these days of keen foreign competition, when nations are running us closer and closer, we cannot afford to quarrel amongst ourselves." That is precisely what we have urged over and over again in these columns, but the nail takes a lot of hammering home. With a vein of sarcastic humour, Sir C. Boyle pointed out that there was a tendency to give undue credit to joint-stock companies, some of which were intended to only produce shares, and nothing else. This certainly is a point which will sooner or later require renewed legislative supervision.

THEN Sir Courtenay went on to refer to the classification of railway rates, and said that he had become aware that "apricot jam" was made of apples, "turtle soup" of conger eel, and that even in "silk fabrics" iron filings were not unknown. Perhaps Sir Courtenay might have made his list more complete had he added to his list the salting of mines, at which at different times a lucrative and extensive trade is done by persons of ingenious and unscrupulous mental proclivities. On the whole, however, the Permanent Secretary of the Board of Trade was right in assuming that our trade holds "its mark in the world" because the buyer has generally confidence in the articles which he bought from us; and passing on to a consideration of the wave of depression through which we are passing at present, he was less pessimistic than most of his contemporaries are. He saw no reason, he said, for believing that the period of depression was likely to be permanent. Such periods of depression, he pointed out, never had been permanent; they always had yielded to periods of prosperity. He saw no reason, if we avoided tricks and inaccuracies on one hand, and internal dissension on the other, why the trade of this country should not once more leap up with a bound to an even higher position than it occupied at the present moment. It is gratifying to find that the views we have so long expressed are emphasised in such a pertinent fashion by an undoubted authority like Sir Courtenay Boyle.

IT was quite to be expected that the opening of the Manchester Ship Canal would lead to pronounced rivalry between the two great trading centres of Liverpool and Manchester. It is just a pity that the leading Manchester bodies did not wake up to the exigencies of the times a few years earlier. Probably had they done so the Manchester Ship Canal would never have been constructed. But Liverpool has been backward and ultra-conservative in its business administration, while Manchester has been vigorous and enterprising. Many complaints have been made as to the pronounced supineness of the Mersey Docks and Harbour Board and other commercial bodies. Their policy has been one of waiting and watching, rather than of seizing time by

the forelock and of making the best of opportunities as they presented themselves. The consequence is that many people think that that city, commercially speaking, is now on the down grade. Whether that may be the case or no, it is well that the local bodies should wake up late rather than never, and do the best they can to maintain their commercial prosperity After all, there is room enough, and trade enough, for both Liverpool and Manchester as receiving and distributing centres for commercial products.

IT will probably occur to many of our readers as being rather odd that a meeting of the Flagstaff Company (Limited) should have been held without another reconstruction taking place. It is difficult to remember how many reconstructions of this unfortunate concern there have been. It is only safe to conjecture that they have occurred as frequently as do revolutions amongst the volatile South American republics. The shareholders in Flagstaff, however, have had something quite as delectable as a bran-new reconstruction to edify them at their meeting on Tuesday, when Professor Vincent was permitted, as the Chairman said, to reply in person to the severe comments which had been made upon him at the last two previous meetings, at which he (the Professor) was not present, or, as Mr. Tafe preferred to put it, to deliver a lecture. If the latter were the more accurate description, no doubt the subject of the dissertation could be best described as being "the whole duty of the shareholders in the Flagstaff," which, being interpreted, means stick to Flagstaff and back up Professor Vincent. The Professor made one of his well known deliverances, the persuasiveness and impressiveness of which Mr. Tafe thinks unduly influence the directors, and the sum total of his remarks was of the old familiar sort—"the developments were now looking very hopeful." That is just what has always been the case, and the company still gets no "forrarder." As a Flagstaff should, the enterprise stands where it is. The shareholders, however, are beginning to think that it is more than time that the perennial hopefulness of the Professor should take the concrete form of perceptible dividends. The fact that the mine paid dividends from 1871 to 1874 is very cheap consolation to the patient shareholders of 1894. And now we await the next reconstruction! Seriously, however, there is one achievement upon which the Professor prides himself and to which the shareholders cannot attach too great weight, and that was the obtaining of the appropriation of public funds in June last for the county road, and the getting of the latter completed by November 1, by which the ore can be conveyed to the market at about half the price it hitherto cost by tramway transportation. The Professor calculates that this will be of immense value to the company. It is only fair to the Professor to remember the long and intimate acquaintance which he has with the mine. He knows every inch of it, and that is saying a great deal.

APROPOS of the interview which we publish in another column with Mr. John Hays Hammond, we notice that under the heading of "Too Many Idle Mines," the San Francisco *Mining and Scientific Press* makes the gratifying announcement that in many parts of California men of capital and energy are acquiring possession of quartz mines which have been idle for many years, and are making a systematic effort to reopen them and place them on a dividend-paying basis. The writer of this article is strongly of opinion that the proportion of non-producers which contain pay ore in the list of Californian mining properties has been altogether too large. There is no important mining district, he says, which does not contain one mine or more with fine records as producers, which have, from one cause or another, been shut down for years. The shafts have caved in, the mines are full of water, the surrounding works have fallen into decay, and the properties are of no practical value either to their owners or to the district in which they are located. We are pleased to hear this news, and we hope that the efforts of these "men of capital and energy" will succeed in restoring the neglected properties to prosperity.

EVEN those who cannot altogether approve of the *raison d'être* of the Miners' Federation of Great Britain, or who in every respect cannot endorse the views of its President (Mr. Pickard, M.P.) will be unable to do otherwise than congratulate the Federation on the favourable circumstances under which they commenced their annual conference during the past week at Leicester. The President seemed to be alive to the delicacy of his position, and got through a difficult task with, on the whole, eminent credit to himself. He alleged, however, that the colliery owners were prepared, prior to the Rosebery Conference, to accept suggestions from outsiders which they would not accept from himself (Mr. Pickard) and others on his side of the House. He admitted, however, that before that whatever they might have thought before entering the room at the Foreign Office, they were not long in it before they found that they had a gentleman to deal with who would strike the balance fairly. "I think," said Mr. Pickard, "every praise and credit are due to his lordship (Lord Rosebery) for conducting the business of the conference in such a way as to bring about a possible settlement of one of the most awful and protracted 'lock-outs' of the present century." It is instructive to note, also, that Mr. Pickard admitted both sides "got a good licking, and that they will never care to have another experience like it for another generation to come."

THE fifth ordinary general meeting of the Champion Reef Gold Mining Company of India (Limited), was held on Wednesday, under the presidency of Sir Charles Tennant, Bart. From the full report of the proceedings, which appears in another column, it will be seen that the company, taking everything into consideration, has evidently a brilliant future before it; and it was very natural that this fact should be abundantly emphasised by Sir Charles Tennant and Mr. John Taylor. The latter gentleman pointed out that the developments which had taken place during the last meeting had vastly increased the value of the property, and in his opinion placed their operations on a secure and satisfactory basis. General Wilkinson also dwelt at length upon the prosperous condition of the company's affairs, and, altogether, the shareholders left the meeting very well satisfied with themselves and their property.

ON the same day, the shareholders in the Gold Fields of Mysore (Limited) met under the presidency of Lord Ribblesdale. Here, again, a very bright outlook was foreshadowed. The Chairman regretted that they were not able to present such a brilliant report as they had been able to do on previous occasions, but the reason given was a satisfactory one, against which there could be no cavilling. As his lordship explained, the property had grown no worse, but sales had not been effected, and the directors did not force sales inasmuch as they were satisfied that demand for their land must come sooner or later. For the rest, it is only necessary to note that the discovery of a rich lode was announced, and that the success of the company in the future was practically assured.

# OUR CITY ARTICLE.

FRIDAY EVENING.

## THE MINING MARKET.

**Kaffirs strong all the week.—A general improvement. Indians revive.—Satisfactory meetings.**

THE feature of the past week has been the activity in the Kaffir market and the general improvements to which it has given rise. These improvements have affected nearly every class of shares. The general opinion is that this activity has come to stay under the influence of better reports from the mines, and the satisfactory statements that are being made at the various meetings of mining companies. Durbans have perhaps been the chief favourite this week, but Cities, Meyer and Charlton, Jubilee, Jumpers, Wolhuters and Nigels have attracted persistent attention. Land shares on the other hand have been more or less neglected until the end of the week, when Chartered, Oceanas and Consolidated Goldfields regained strength. A circular has been issued to the shareholders of the latter company, offering the bonds to the shareholders prior to an appeal to the public. It appears from this document that of the total amount, £600,000, which it is proposed to raise, debentures for £250,000 have already been applied for and have been allotted in full; £250,000 are offered for subscription, and £100,000 are reserved for issue in Cape Colony. In the miscellaneous market the feature has been the revival in Indians consequent upon encouraging reports and the satisfactory meetings of the Champion Reef Company and the Gold Fields of Mysore. At the former meeting Sir Charles Tennant had most hopeful news to impart and the announcement he made as to the possibility of an early dividend naturally improved the shares. At the meeting of the Gold Fields of Mysore, Lord Ribblesdale, who presided, alluded to a tremendous process of betterment always at work and always affecting the property of the company. This likewise had an improving effect upon the shares, the meeting putting a much better complexion upon the position of the company. Other miscellaneous descriptions have been more or less at a standstill. Tolima "A," Poorman Consolidated, American Belle, and Australian shares have been enquired for at improved prices, but most of the others have receded. The Cornish market was extremely flat during the earlier part of the week, but when it became known that there was a slight turn in tin there was no longer any desire to sell, yet even dealers, who were bare of shares, did not appear anxious to buy. Dolcoaths are dull at 69½. The dividend to be declared at the meeting next Tuesday is expected to be 10s. per share. Killifreths are better at 3⅜. The 40 fathoms level west is still rich, and had there been any life in the market the shares would doubtless be higher. Wheal Kitty are steady at 12s. 6d. It is reported that the West Kitty lode, which was intersected recently in the 60 fathom cross cut, is producing rich work for tin; but, so far, no official report has been issued. A rise of £5 per ton in the price of tin is wanted to infuse some life into our share market. Risen: Killifreth, 5s.; and Wheal Agar, 10s. Fallen: Carn Brea, 5s.; Dolcoath, 20s.; East Pool, 10s.; Tincroft, 10s.; West Kitty, 5s.; Wheal Basset, 10s.; and Wheal Grenville, 20s.

### South African Shares.

At the beginning of the week carry-over arrangements mainly occupied attention. A comparison of making-up prices with those of December 27th shows that in most cases Kaffirs have advanced during the account. After this business was over, there was considerable buying of Kaffirs. Durbans was a feature of the day, the shares advancing 1⅝ to 5 1/16. Wolhuters likewise received much attention, the price going up to the extent of 7/16. Jumpers were strong, and revived to 3¼. Improvements also took place in Cities, Geldenhuis Estate, Henry Nourse, Crown, Langlaagte, Spes Bona, Primrose, Salisbury, and a number of others. Kaffirs were again active on Tuesday, when the above-named shares showed further improvement and strength. Diamond shares displayed more activity, De Beers advancing 1/16 to 16⅝, and Jagers ⅛, to 15 7/16. On the following day the firm tone in this market was continued. Meyer and Charlton were especially firm, the shares improving to 5¼. There was a demand for Village Main Reef, which sent the shares up to 3 5/16. Other strong features were Nigels, Geldenhuis Main Reef, George and May, Glencairns, Modderfonteins, and Randfonteins. On the other hand Ferreiras, Heriots, Crœsus, Henry Nourse, Cities, Wemmer, Stanhope, Wolhuter, and Spes Bona slightly receded. Land descriptions were dull, as well as Diamond shares. Later in the week Spes Bona advanced, as well as Heriots and Jubilees. Meyers are firm, but Geldenhuis Estate, Jumpers, Stanhopes, Villages, and Riets are easier. Chartered are stronger, but Explorings have receded. Oceanas, on the other hand, have rallied, as well as Consolidated Goldfields. De Beers are easier, but Jagers have improved. Risen: Alexander Estates, 6d.; Chartered of South Africa, 6d.; Crown Reefs, 2s. 6d.; Durban Roodepoort, 10s.; Geldenhuis Deep, 2s. 6d.; Geldenhuis Estate, 2s. 6d.; Geldenhuis Main Reef, 1s.; George and May, 2s. 6d.; Glencairn, 6d.; Joe's Luck, 1s. 6d.; Luipaard's Vlei, 6d.; Metropolitan, 1s. 3d.; Meyer and Charlton, 7s. 6d.; New Chimes, 2s. 6d.; New Crœsus, 1s. 3d.; Nigel, 2s. 6d.; Northern Transvaal Land, 6d.; Orange Free States, 5s.; Princess Estate, 1s. 3d.; Randfontein, 6d.; Salisbury (allowing for dividend), 2s.; Simmer and Jack (allowing for dividend), 2s.; Transvaal Coal Trust, 9d.; United Langlaagte, 2s. 6d.; United Roodepoort, 1s. 3d. Fallen: Champ d'Or, 2s. 6d.; Central Montrose, 6d.; Consolidated Deep, 1s. 3d.; De Beers (allowing for dividend), 2s. 6d.; Exploring, 2s. 6d.; Ferreira, 5s.; Heriot, 2s. 6d.; Main Reefs, 6d.; New Jagersfontein (allowing for dividend), 7s. 6d.; Oceana Development, 2s. 6d.; Rietfontein, 7s. 6d.; South African Exploration, 5s.; South African Trust and Finance, 6d.; South Simmer and Jack, 1s. 3d.; Transvaal Exploration, 6d.; Witwatersrandt (Knight's) 6d.

### Indian and Miscellaneous Shares.

At the commencement of the week this market attracted few buyers. Amongst Indians Champion Reef and Mysore Gold attracted most attention, the shares in each case improving 1/16. Nundydroog exhibited a tendency to improve. Amongst other miscellaneous securities Aladdin's Lamp and Montana were firm. On the following day Mysore Gold receded 1/16. Montana were the turn better. El Callao rose ⅛ and Guston 1/16. On the other hand Don Pedro fell 1/16 and Del Reys 1s. Rio Tinto recovered 1/16. On Wednesday this market displayed more activity than at any previous part of the week. There was a much firmer tone in Indians, Champions being most prominent, as a result of the satisfactory meeting held the day before. Owing to a similar cause Gold Fields of Mysore were firmer. Ooregums were also more active, as well as South-East Mysores. Towards the close of the week they maintained their buoyancy. Amongst other miscellaneous descriptions Harquahala and Aladdin, are strong. Risen: Brilliant Block, 1s. 3d.; Broken Hill Proprietary (allowing for dividend), 1s. 6d.; Champion Reef, 5s.; De Lamar, 1s.; El Callao, 3s.; Golden Feather, 6d.; Gold Fields of Mysore, 6d.; Harquahala, 2s.; Mason and Barry, 5s.; Montana, 1s.; New Queen, 6d.; Ooregum, 1s. 3d.; Poorman, 1s; Tolima A, 25s.; ditto B, 10s.; True Blue Block, 6d. Fallen: Blue Spur, 6d.; British Broken Hill, 6d.; Burma Ruby, 6d.; Colombian Hydraulic, 6d.; Copiapo, 2s. 6d.; Don Pedro, 1s.; Elkhorn, 1s.; Mill's Day Dawn, 3s. 9d.; Mysore Reefs, 6d.; Mysore West, 6d.; Nine Reefs (fully paid), 6d.; Pahang Corporation, 1s.; Rio Tinto, 1s. 3d.; St. John Del Rey, 1s.; Sierra Buttes (Plumas Eureka, 1s.; Wentworth Priority, 1s. 3d. Dividends announced: Baker's Creek, 1s,

## THE STOCK MARKETS.

**Markets steady.—Consols firm.**

To-day business on the Stock Exchange has tapered off, but with one or two exceptions the markets are steady. Consols are firm. Colonial loans are generally well maintained, but few movements are shown. Home railways in the course of the afternoon became temporarily dull owing to a few realisations, but in the last hour have become strong again and close firm. Brighton Deferred has been freely bid for, resulting in an advance of 1⅛. North British, North Eastern, and Great Eastern leave off ⅜ higher, Sheffield Deferred ½, and most others ⅛ to ¼. American railways have been rather dull all day, but they close with a better tendency, New York sending buying orders. The changes established, however, are still in most cases against holders, though in no case to a greater extent than ⅛ to ⅜. Norfolk and Western Preference have advanced ⅞, the London agents having received confirmatory advices that the company is not in financial difficulties and that the talk of a receivership is absurd. Canadian lines have been quiet. Canadian Pacific leaves off ⅜ lower, while Grand Trunk Preferences mark a trifling improvement.

## THE MONEY MARKET.

**No change in the Bank Rate.**

General anticipations in regard to the course the directors of the Bank of England would take at their meeting in regard to the official standard were doomed to disappointment, no change taking place. The figures, however, placed before the directors would have fully justified them in lowering the rate even to 2 per cent., and it is difficult to understand what could have influenced them in deciding on the course taken. It is true that the improvement in the position of the Bank was almost entirely occasioned by internal movements, but reductions in the official rate have many a time been made on a similar basis. Tax payments are apparently already in full swing, and are rapidly bringing both coin and notes to this centre. Including £66,000 gold received from abroad, the stock of bullion was augmented £726,565, and as the note circulation ran down £324,395, the reserve rose £1,050,960, to £17,962,795. We append our usual statement.

ISSUE DEPARTMENT.

| | | | |
|---|---|---|---|
| Notes Issued | £40,960,280 | Government Debt | £11,015,100 |
| | | Other Securities | 5,434,900 |
| | | Gold Coin and Bullion | 24,510,280 |
| | | Silver Bullion | — |
| | £40,960,280 | | £40,960,280 |

BANKING DEPARTMENT.

| | | | |
|---|---|---|---|
| Proprietors' Capital | £14,553,000 | Government Securities | £10,760,317 |
| Rest | 3,442,044 | Other Securities | 25,206,720 |
| Public Deposits | 5,327,564 | Notes | 15,932,520 |
| Other Deposits | 30,426,228 | Gold and Silver Coin | 2,030,275 |
| Seven Day and other Bills | 181,496 | | |
| | £53,929,832 | | £53,929,832 |

The return shows the following changes when compared with the previous statement:—Circulation Issue (increase), £714,745; Circulation Active (decrease), £224,395; public deposits (increase), £427,862; other deposits (decrease), £924,036; Government securities (decrease), £1,000,000; other securities (decrease), £505,923; coin and bullion (increase), £726,565; seven days' and other bills (increase), £25,658; rest (increase), £15,553; notes in reserve (increase), £1,039,140; total reserve (increase), £1,050,960).

To-day the Money Market continues quite stagnant, and rates, though not quotably lower, have an easy tendency.

## FORTHCOMING MEETINGS.

**** We shall be obliged if Secretaries or other Officials of Mining, Railway and other Companies' will be good enough to advise us as early as possible of the date, time and place of their forthcoming meetings—whether statutory, semi-annual, annual, general or extraordinary, confirmatory or adjourned—in order that particulars may be announced for the benefit of our subscribers and more particularly our country readers. Balance sheets, reports and other matter to be submitted at such meetings should, where possible, accompany the intimations of the meetings sent.*

| Name of Company. | Date. | Nature of Meeting. | Place. | Time. |
|---|---|---|---|---|
| Exploration Company | Jan. 12 | General | Cannon-street | 3 p.m. |
| Village Main Reef | Jan. 23 | General | Cannon-street | [3.30 p.m. |
| Queensland Inv. & Ld. Co. | Jan. 24 | General | Cannon-street | 12 a.m. |
| Transvaal G. Ex. & Ld. Co. | Jan. 24 | General | Cannon-street | 12 a.m. |
| Foreign & Colonial Deb. Cor. | Jan. 25 | General | Cannon-street | 12 a.m. |
| Pigg's Peak Es. & Gd. Co. | Jan. 25 | General | Cannon-street | 2 p.m. |
| Windsor & Annapolis Rlwy. | Jan. 26 | General | Cannon street | 11 a.m. |
| Foreign & Colonial In. T. Co. | Jan. 26 | General | Cannon-street | 3 p.m. |
| General Mng. Asso. (Ltd) | Jan. 26 | General | Winchester Ho. | 12 a.m. |
| Buenos Ayres N. R. Co. (Ld.) | Jan. 26 | General | Winchester Ho. | 12,30 p.m. |

# OUR LATE COLUMN:

## SPECIAL TELEGRAMS AND LATEST NEWS

Up to the time of going to Press.

## LATEST MARKET REPORTS.

(SPECIAL TELEGRAMS FROM OUR OWN CORRESPONDENTS.)

MANCHESTER, Friday.

In Manchester iron there is, if anything, rather more business reported, and Scotch and Middlesbro' brands offering here are firm although not quotably higher. Lancashire makers also firm at late rates, but Lincolnshire pig iron slightly easier, with moderate sales about 6d. under late rates. Hematites unchanged; finished iron rather weak In the coal trade Yorkshire owners are competing at lower prices for business here, and this weakening market causing buyers to hold back contracts of any weight.

BARNSLEY, Friday.

Collieries have worked well during the week, but complaints are general respecting scanty supply of wagons which has operated seriously on shipments of South Yorkshire coal at Humber ports. Prices of house coal are slightly easier owing to mild weather. Silkstones are, however, quoted at 14s. to 15s. Barnsley softs, and Flockton 13s. to 14s. per ton. Steam coal, considering period of year, is in good request. From Hull shipments abroad on account of old contracts are numerous. Prices of steam coal in the open market range from 11s. to 12s. per ton. Slack and smudge in limited demand. Coke trade improving.

CARDIFF, Friday.

There has been but a limited demand for steam coal this week and the outlook is rather gloomy, prices are drooping, and generally business is in an unsettled state. To-day's quotations were:—Best qualities, 13s. 9d. to 14s. 6d.; seconds, 12s. 9d. to 13s. 3d.; smalls, 6s. to 7s.; and patent fuel 12s. 6d to 13s. per ton. Bituminous coal is selling well at the following prices:—Best, 15s. 6d.; No. 3 large, 13s. 9d.; No. 2 large, 12s. 6d.; and smith's coal, 8s. per ton. Coke, foundry, 18s. 6d. to 19s. 6d., and furnace 17s. 6d. to 18s. per ton. Iron ore market firm. Present prices are:—Rubio, 11s. 6d.; Tafna, 10s. 9d.; Garrucha, 10s. 6d. per ton. Market for manufactured iron and steel firmer. Steel rails, heavy sections, are quoted at £3 15s., and light sections £4 12s. 6d. per ton. Bessemer tin-plate bars £4 2s. 6d. to £4 5s. per ton.

## CORNISH SHARE MARKETS.

REDRUTH, Friday

This evening's closing prices are as follows:—Carn Brea, 13½; Dolcoath, 70½; East Pool, 11½; Killifreth, 3⅜; South Crofty, 2¼; Tincroft, 12; West Kitty, 8; West Frances, 1½; Wheal Agar, 3; Wheal Basset, 2½; and Wheal Grenville, 14.

## THE CONFERENCE OF MINERS.

To-day's (Friday's) proceedings at the Miners' Federation Conference at Leicester were held with closed doors, and after a long and animated debate a resolution was adopted in favour of the nationalisation of mines on the ground of public interest. The Conference also decided to send representatives of the Federation to the Miners' International Congress to be held in Berlin this year, and that Mr. B. Pickard, M.P., should be nominated as secretary to the International Congress.

### SPECIAL TELEGRAM.

## PHŒNIX AND WEST PHŒNIX UNITED MINES.

**The company to be registered as unlimited.**

(FROM OUR OWN CORRESPONDENT.)

Friday Evening.

A general meeting of shareholders in Phœnix and West Phœnix United Mines was held at Liskeard to-day.

Mr. W. POLKINGHORNE, purser, said in response to the circular sent out asking shareholders to approve or not of the company, he had received approvals amounting to 8689 shares. The proxies received represented 3950 shares, besides the shareholders present at the committee meeting, who represented 3962 shares, making a total of 7912. He proposed "That the Phœnix and West Phœnix United mines be registered as an unlimited company, under the Companies' Act."

Mr. BRYANT asked whether the shareholders were to have their money in cash or in shares in the event of the company being successfully floated.

The CHAIRMAN said that was a matter which concerned the committee and had nothing to do with the object for which the meeting was called.

Mr. MATHEWS (Tavistock) pointed out that the resolution only committed the shareholders to a preliminary step to forming themselves into a Limited Liability company. Discussion on the general proposals might take place at a subsequent meeting.

After further discussion, the CHAIRMAN said the committee were very well satisfied with the negotiations as far as they had gone.

Mr. WILLIAM CHARLES, financial agent, London, the gentleman who had offered to undertake the formation of the new company, also pointed out that the passing of the resolution would not prevent discussion of the scheme at a future meeting.

Mr. CHYNOWETH seconded the resolution, being satisfied with the explanations given by the Chairman.

Mr. BRYANT pressed his questions relating to the details of the scheme, but the Chairman ruled them out of order, and the motion was then carried.

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METROPOLITAN RAILWAY COMPANY.—The half yearly meeting of this company was held yesterday at the Cannon-street Hotel, E.C., Sir E. Watkin presiding. In moving the adoption of the report the Chairman alluded to it as satisfactory. The company had lost £10,000 in traffic, and had lost the increase of traffic, which meant another £10,000. They, however, knew the cause, which was unfortunate social relations. Capitalists and workpeople had had a struggle for the mastery, and he did not know who had won. He was glad to see that Mr. Pickard gave considerable hope that this would be the last of their strikes. He was glad to be consoled with the assurances that the appointment of a small committee, or an arbitrator, would prevent if possible these things happening again, because he believed that Mr. Pickard was an honest man, and he had great faith in what he said. —Mr. Pochin seconded the adoption of the report.—Mr. J. S. Buxton moved as an amendment that the statement of accounts, report and recommendations therein contained, do not meet with the approval of the proprietors, and that with the view of affecting an improvement in the financial condition of the company, drastic measures, including an increase in the directorate to 12 members, six to be selected from persons holding only consolidated ordinary stock, be recommended. He intended that amendment to be perfectly friendly, contending that there was not that improvement in the concern that they had a right to look for, and that one reason was the paucity of the directorate.—The Chairman stated that the board of directors numbered seven by the recommendation of the Committee of Investigation, and that recommendation had been adhered to, as it had acted very satisfactorily. He advised the meeting to let well alone.—Mr. Newby seconded the amendment, but on being put to the vote, only two voted for it,—The Chairman declared it lost, and the report was carried.

# MINING NOTES.

## HOME, COLONIAL, AND FOREIGN.

*The Australian Mining Standard* reports that it seems as if the cyanide process was about to establish itself upon a firm footing in South Australia. It has already been applied with considerable success to the treatment of ores at Wadnaminga and has given a distinct fillip to the mining operations in that district, and now it is suggested that a plant should be established in a central position in the auriferous country amongst the Mount Lofty Ranges, near Adelaide. There is abundance of material in the Adelaide hills to operate upon, and with the exercise of a little energy and good management there ought to be money in the treatment by cyanide of vast quantities of ore which have resisted efforts made in the past to extract the gold from them with profit. The cyanide process has proved a great boon to South Africa, and although we recognise that there is a wide difference in the circumstances there and here, we know of no reason why the process should not be extensively availed of in many mining districts throughout the colony where rich refractory stone exists in quantity, and has had to be left alone or has only been dealt with spasmodically.

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THE Langlaagte Estate is now the largest gold-producing subterranean mine in the world, and the largest user of the cyanide process. The methods of ore treatment are practically perfect, and, as a result, this mine is unrivalled in South Africa as regards profits made from low-grade ore. There are at least four and a half miles of drives underground along the reefs, and high praise is due to the management for the manner in which the mine is worked. There are three vertical shafts 400 feet in depth, and the length of reef on the property is 3900 feet. The fourth, fifth, and sixth levels are well developed, and there are 400,000 tons, or 12 months' ore, ready for milling. To keep the head of stamps in full work it is necessary for 25,000 tons of ore to be sent monthly to the mill, and but for the width of the reefs, which are stoped from 8 to 11 feet wide, there would be some difficulty in doing this. The output for January is thought likely to be slightly better than that for December, but probably the mine has nearly reached the limit of its rate of yield.

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DEVELOPMENT in the east mine of the George Goch is being effected from a vertical shaft 200 feet deep. There is also a drive on the middle reef 150 feet in length at the third level; the reef is 3 feet wide. This is the best end of the mine. The middle reef is the richest and best defined; the main reef has been struck, but is stated to be not so rich as the others. The second level is well developed, and the reefs are big. As regards the west mine or shaft, there is a vertical shaft 200 feet deep, and the south or main reefs are in course of development. These reefs are here 4 feet wide, but are not so rich as the middle reef. There are 20,000 tons of tailings, which will give 4½ dwts. under the cyanide process. Notwithstanding the fact that the company is in debt, it would be well to erect cyanide works for the purpose of treating these tailings at once. There are 35,000 tons of ore developed, and the mine should certainly be able to maintain its rate of output for December—1774 ounces; but probably the adoption of the cyanide process is essential to any improvement over its past record.

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THE value of the mineral resources of New Caledonia, says the *Australian Mining Standard*, has hitherto been recognised chiefly in connection with the production of nickel ore, but gold and cinnabar resources which have up till recently, either been hidden or disregarded, are now to receive attention. We learn from recent advices that some sensation has recently been caused in Noumea by the discovery of gold between Le Foa and Canalia. A special concession of 493 acres has been granted by the Government to the owners of a property known as the Mount "Marcelle" mine at a nominal rent, without any particular restrictions. The work carried out to date upon the property may be looked upon as prospecting only, but sufficient is shown to prove that the mine or mountain is a most valuable one. Several reefs run through the whole length of it, averaging in size from 3 to 5 feet wide, assays taken from various portions of which have given 2 ounces 8 dwts. to 3 ounces 12 dwts. per ton. The ore is entirely of a free milling character. Every facility is on the ground for working the mine to advantage, including suitable timber, while a freshwater river, 120 feet wide, passes alongside the property. At the base of Mount Marcelle, and included in the concession, are two cinnabar springs; but, so far, no work has been done towards developing this important industry. It is understood, however, that operations will be immediately commenced with the view of opening up the same, which, if successful will prove of great benefit to the colony.

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AT the May Consolidated, Mr. Connor is now engaged in making an exhaustive report upon the surface arrangements at this company's property, with a view to an increase of its stamping capacity at an early date to 100 head, and to the erection of a powerful compressor plant, head gear and sorting floors at the new main incline shaft, which is now being put down at the "Annie" block.

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MOST of the rich developed ore in the upper levels of the Glencairn has been worked through, the result being that a lot of low grade ore has had to be put through the mill. This, as already explained, is the reason for the falling off in the output. Development is now taking place in the lower levels, and there will probably be no necessity for a stoppage of the battery. Cyanide works are in course of erection, to be capable of treating 6000 tons per month.

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TIN has been found in paying quantities in the North of Portugal, and has been worked for in a very irregular manner for many years, and it is now about 18 months since one of these mines has been working consecutively and has been forwarding both tin and wolfram to Liverpool, both of which minerals have been found to be of the best quality. The valuable opinion of Captain Josiah Thomas, who visited this property in November last, is most favourable, stating that it is the best tin mine he has seen in Spain or Portugal.

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THE attention of the House of Commons was directed to the Welsh Gold Fields on Friday, when Sir J. Hibbert, in reply to Mr. Molloy, said that during the last seven years 43,650 tons of ore had been worked in North Wales, which had yielded 23,716 ounces of gold, or nearly 11 dwts. to the ton. In 1893 the quantity crushed was only 4300 tons. Any definite proposal to work gold fields on Crown lands in Wales would be carefully considered with a view to the development of the industry.

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THE AFRICAN GOLD RECOVERY COMPANY (LIMITED) announce that 38,000 ounces of gold have been recovered at the Randt, and 6200 ounces in other districts; total, 44,200 ounces during December by means of their MacArthur-Forrest cyanide process, being 26 per cent. of the Randt output for December. The November total was 40,310 ounces.

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AT a meeting of the Albert Mine, held in Pretoria, it was resolved to liquidate the company, there being no response to the suggestion of the directors as regards the raising of new capital.

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SIMMER AND JACK should show a material increase in the near future, as heavier boxes and stamps are being put in at the same time as the battery is being overhauled, five stamps at a time. It is stated that the mine has a good amount of ore in sight, and that development is being pushed on rapidly.

# THE METAL MARKETS.

## LONDON METAL MARKET.

THE METAL MARKET—LONDON, JANUARY 19.

### Copper.

AMERICA continues to offer copper at unchanged prices as regards first hands, but second hand stuff is still obtainable under first hand prices. The speculative market was dull and irregular on the opening day, s.c. being treated successively at £42 and £41 15s., and three months at £42 7s. 6d., £42 5s., £42 7s. 6d., £42 6s. 3d., and £42 2s. 6d. The transactions amounted to about 600 tons, but on Tuesday a large business, in all about 1250 tons, took place, the range of values being from £41 13s. 9d. to £41 16s. 3d. s.c. G.M.B.'s, and £42 2s. 6d. to £42 3s. 9d. three months. Wednesday was a very quiet day, but £42 5s. was paid for three months. Yesterday the tone was rather firmer on speculative buying, and s.c. changed hands at £41 17s. 6d. and £41 18s. 9d., whilst this morning £42 was done for spot. The market closes, however, easier again at £41 16s. 3d. to £41 17s. 6d. s.c., and £42 3s. 9d. to £42 5s. three months. Statistics for the first fortnight of the present month show an increase of about 300 tons. In furnace material we have to report 900 tons of Namaqua ore done at 7s. 10½d.

### Tin

opened very dull and business took place in spot Straits at £72 down to £71 15s., £72 7s. 6d. being paid for some Australian s.c. For three months Straits £72 10s. was paid, Tuesday brought still lower values, £72 5s. being finally recorded for three months. On Wednesday there was at first a fall from £71 12s. 6d. to £71 10s. s.c., but in the afternoon the tone was steadier, and three months recovered to £72 7s. 6d. Yesterday values improved still further, spot changing hands at £71 12s. 6d. up to £72 2s. 6d., and three months rising proportionately. To-day there was at first a continuation of the rise, up to £72 12s. 6d. being done for spot, but a relapse followed and £72 5s. was accepted, the market closing flat at £71 17s. 6d. to £72 s.c., and £72 15s. to £72 17s. 6d. three months.

### Pig Iron.

In the Glasgow market the values of Scotch pig iron have not fluctuated very widely. On the opening day the range was 42s. 9½d. to 43s. s.c., on Tuesday nothing under 42s. 11d. was accepted, but ½d. lower was taken on Wednesday. The subsequent business was at 43s. 0½d. to 43s. 2d., and the closing prices are 43s. 2d. sellers s.c. Scotch, 45s. 2d. Hematite, and 35s. 7½d. Cleveland. Scotch shipments for the week ending 13th January are reported as 3626 tons or 3855 tons less than in the corresponding week of last year.

### Lead

has been a decidedly dull market at £9 7s. 6d. soft foreign, and there is no new feature of interest to record. The close is flat at £9 5s. to £9 7s. 6d. soft foreign, and £9 7s. 6d. to £9 10s. English.

### Spelter.

This article has again cheapened, the present quotations being £16 2s. 6d. to £16 5s. for ordinaries, and £16 7s. 6d. for specials.

### Antimony

is dull and easier in price, the value to-day being £37.

### Quicksilver.

Firsts are steady at £6, seconds have declined to £5 17s.

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The following are to-night's (January 19) prices of metals:—

| | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| **Copper.** | | | | | | |
| Tough cake and ingot | 44 | 5 | 0 | 45 | 0 | 0 |
| Best selected | 45 | 0 | 0 | 45 | 15 | 0 |
| Sheets and sheathing | 53 | 10 | 0 | 53 | 10 | 0 |
| Flat bottoms | 56 | 0 | 0 | 56 | 10 | 0 |
| Chili bars | | | | 55 | 0 | 0 |
| Good merchantable, spot, & 3 months respectively | 41 | 17 | 6 | 42 | 5 | 0 |
| Copper tubes | | | | 0 | 0 | 7¼ |
| **Alloys.** | | | | | | |
| BRASS: Wire | | | | 0 | 0 | 5¾ |
| " Tubes (solid drawn) | | | | 0 | 0 | 5¾ |
| " Sheets | | | | 0 | 0 | 6¼ |
| PHOSPHOR BRONZE: Alloys II. | | | | 88 | 0 | 0 |
| " " III. or V. Cog Wheel Brand | | | | 93 | 0 | 0 |
| " " VII. | | | | 95 | 0 | 0 |
| " " XI. | | | | 98 | 0 | 0 |
| " " Vulcan brand A1 B.C. | 80 | 0 | 0 | 85 | 0 | 0 |
| DURO METAL | 80 | 0 | 0 | 85 | 0 | 0 |
| BULL'S METAL | | | | 70 | 0 | 0 |
| FERROBRONZE: Ingots per lb. | 0 | 0 | 6 | | | |
| " Ordinary sheets, plates, bolts and bars | 0 | 0 | 7 | | | |
| " Screw bolts and nuts | 0 | 0 | 8½ | | | |
| " Pump rods, plain | 0 | 0 | 7¼ | | | |
| " " finished | 0 | 0 | 10½ | | | |
| DELTA METAL: No. 4 (per ton) | | | | 73 | 10 | 0 |
| " Sheets and plates (per lb.) | 0 | 0 | 10½ | | | |
| " Bars, round, square, flat (per lb.) | 0 | 0 | 9½ | | | |
| " " hexagon (per lb.) | 0 | 0 | 9 | | | |
| **Tin.** | | | | | | |
| English, ingots, f.o.b. | 77 | 0 | 0 | 77 | 10 | 0 |
| " bars | 78 | 0 | 0 | 78 | 10 | 0 |
| " refined | 79 | 0 | 0 | 79 | 10 | 0 |
| Straits, spot and 3 months respectively | 72 | 0 | 0 | 72 | 17 | 6 |
| Australian spot, and three months respectively | 72 | 7 | 6 | 73 | 5 | 0 |
| Banca " (in Holland) | | | | 78 | 12 | 6 |
| TIN PLATES: Charcoal, best quality per box | 0 | 13 | 6 | 0 | 15 | 6 |
| " " ordinary | 0 | 12 | 0 | 0 | 12 | 6 |
| " Coke, best quality | 0 | 11 | 0 | 0 | 11 | 3 |
| " " ordinary | 0 | 10 | 3 | 0 | 10 | 4½ |

*These prices of tinplates are f.o.b. at Swansea; at Liverpool 6d. per box more.*

| | | | | | | |
|---|---|---|---|---|---|---|
| **Iron.** | | | | | | |
| Pig, G.M.B., f.o.b., Clyde, spot | | | | 2 | 3 | 2 |
| " Scotch pig, No. 1 Gartsherrie | | | | 2 | 11 | 0 |
| " " Coltness | | | | 2 | 16 | 6 |
| " " Clyde | | | | 2 | 9 | 6 |
| " " Govan | | | | 2 | 4 | 6 |
| Bars, Welsh, f.o.b. Wales | | | | 6 | 2 | 6 |
| Plates " " | | | | 6 | 2 | 6 |
| Bars, Staffordshire, at works | | | | 5 | 12 | 6 |
| Sheets " " | | | | 6 | 17 | 6 |
| Plates " " | | | | 6 | 12 | 6 |
| Hoops " " | | | | 5 | 15 | 0 |
| Ship plates, Middlesborough | | | | 4 | 12 | 6 |
| STEEL: English spring nominal according to quality | 9 | 0 | 0 | 20 | 0 | 0 |
| " " cast " | 15 | 0 | 0 | 55 | 0 | 0 |
| " Rails at works, 50 lbs. per yard and upwards | 3 | 15 | 0 | 3 | 18 | 9 |
| " " light, at works, according to section (extra) | 0 | 10 | 0 | 2 | 0 | 0 |
| **Lead.** | | | | | | |
| Spanish or soft foreign | 9 | 5 | 0 | 9 | 7 | 6 |
| English pig, common | 9 | 7 | 6 | 9 | 10 | 0 |
| " L.B. | | | | 10 | 5 | 0 |
| " sheet and bar | | | | 10 | 15 | 0 |
| " pipe | | | | 11 | 5 | 0 |
| " red | | | | 13 | 0 | 0 |
| " white | | | | 17 | 10 | 0 |
| " patent shot | | | | 14 | 10 | 0 |
| **Spelter** | | | | | | |
| Silesian ordinary brands | 16 | 2 | 6 | 16 | 5 | 0 |
| " special brands | | | | 16 | 7 | 6 |
| English Swansea | | | | 16 | 17 | 6 |
| Sheet Zinc | 18 | 10 | 0 | 19 | 0 | 0 |
| **Antimony.** | | | | | | |
| Antimony | | | | 37 | 0 | 0 |
| **Quicksilver.** | | | | | | |
| Flasks, 75 lbs. warrants | 5 | 17 | 6 | 6 | 0 | 0 |
| **Manganese.** | | | | per unit. | | |
| Ore, c.i.f., U.K. ports | | | | | | |
| 1st quality, 50 per cent. and upwards | 0 | 0 | 11½ | 0 | 1 | 0 |
| 2nd " 47 per cent. to 50 per cent. | 0 | 0 | 10 | 0 | 0 | 11 |
| 3rd " 40 " 47 per cent. | 0 | 0 | 9 | 0 | 0 | 10 |
| **Aluminium.** | | | | | | Per lb. |
| 98-99½ per cent. (guaranteed 98 per cent. min.) | | | | In ingots (1 cwt. lots) | | 0 2 2 |
| do | | | | do (5 cwts. and up) | | 0 1 9 |

# "THE MINING JOURNAL" SHARE LIST.

**ABBREVIATIONS AND REFERENCES.**—The following are the significations of the abbreviations and references which occur in the Share List:—*Ay*, Antimony; *A*, Arsenic; *Bl*, Blende; *Bx*, Borax; *C*, Copper; *D*, Diamond; *G*, Gold; *I*, Iron *L*, Lead; *M*, Mundic; *N*, Nitrates; *P*, Phosphates; *Q*, Quicksilver *R*, Ruby; *S*, Silver; *S-l*, Silver-lead; *Sul*, Sulphur; *T*, Tin; and *Z*, Zinc. * in the "called up" column of British Mines, signifies that the mine is conducted on "Cost Book" principles: † in the "Head Office" column of African Mines, signifies that the address given is not that of the head office, but of a sub- or transfer office and ‡, following the names of African mines, signifies that they are subject to the Limited Liability Law of the South African Republic.

*** *The following is by far the most complete and comprehensive list of mines, in whose shares business is being currently transacted, published. Additions will be made from time to time as occasion requires. Every effort is made to ensure accuracy, and Secretaries of Companies, Share dealers, and our readers generally, are cordially invited to co-operate with us to this end, by notifying us of any errors that may at any time occur. We desire it to be understood that, while our Share List will almost invariably be found correct; we do not hold ourselves responsible for any loss or inconvenience that may arise from possible inaccuracies.*

## BRITISH MINES.

| Name. | Closing Price, Jan. 19, 1894 | Closing Price, Jan. 12, 1893. | Par. | Latest Dividend. | Called up Per Share. | Shares Issued. | Situation of Mine. | Head Office. |
|---|---|---|---|---|---|---|---|---|
| | | | £ s. | | £ s. d. | | | |
| Atlas .....*T* | — | — | 1 0 | — | 0 12 6 | 12,000 | Devon ..... | Camborne. |
| Pine Ville ....*CT* | 2/- 3/- | 3/6 | * | 2/- May '81 | 6 11 6 | 6,000 | Cornwall ..... | Camborne. |
| Fotallack .....*T* | — | — | * | — | 80 2 6 | 2,220 | Cornwall ..... | St. Just. |
| Carn Brea .....*T* | 12¾ 13¼ | 13½ | * | 5/- Sep.,'93 | 21 5 0 | 6,000 | Cornwall ..... | Carn Brea. |
| Cook's Kitchen ..*T* | 1/- 2/6 | 2/6 | * | — | 53 17 6 | 4,900 | Cornwall ..... | Camborne. |
| Cumberland .....*L* | — | — | 1 0 | 5% May, '88 | 1 0 0 | 85,000 | Cumberland... | 7, Angel-court E.C. |
| Derwentwat'r.*CLZ* | — | — | 1 0 | — | 1 0 0 | 20,000 | Cumberland.. | Manchester. |
| Devon Gt Cons *CA* | 1¾ 1⅝ | 1½ | 5 0 | 3/- Nov. '93 | 2 0 0 | 10,000 | Devon ..... | 8, Finsbury-circus. |
| Polcoath .....*T* | 69 70 | 71 | * | 20/- Nov. '93 | 10 14 0 | 4,000 | Cornwall ..... | Camborne |
| Drakewalls *CTM* | — | — | 5 0 | — | 0 1 6 | 10,000 | Cornwall ..... | Dashwood House. |
| East Blue Hills *T* | — | — | * | — | 1 8 3 | 2,000 | Cornwall ..... | 79½, Gracechurch-st. |
| EastGrassington *I* | — | — | * | — | 1 2 0 | 6,995 | Yorkshire..... | Palmerston-building |
| East Pool .....*AT* | 11 11½ | 12 | * | 7/- Nov. '92 | 0 9 9 | 6,400 | Cornwall ..... | Illogan. |
| Gawton .....*CA* | — | — | 50/- | — | 2 7 3 | 12,000 | Devon ..... | 20, Great St. Helens. |
| Great Taxay.....*L* | 2½ 3½ | 3½ | 4 0 | 5/- Apr., '82 | 4 0 0 | 15,000 | Isle of Man ... | Douglas, Isle of Man. |
| Green Hurth ...*L* | — | — | 1 0 | -/8 June '89 | 0 17 0 | 32,000 | Cumberland... | Newcastle. |
| Halkyn .....*L* | — | — | 1 0 | 2/- Sep, '93 | 1 0 0 | 10,000 | Flintshire..... | Chester. |
| Hexworthy .....*T* | — | — | 1 0 | — | 1 0 0 | 18,335 | Devon ..... | 6, Queen-street-place |
| Isle of Man .....*L* | — | — | 5 0 | 5/6 Sep, '93 | 5 0 0 | 14,000 | Isle of Man ... | Chester. |
| Killifreth .....*T* | 3¾ 3⅝ | 3¾ | * | 2/6 Aug. '93 | 5 10 3 | 6,000 | Cornwall ..... | Truro. |
| Kingside.....*LB* | — | — | 1 0 | 3/- May, 1892 | 1 0 0 | 20,000 | Cardiganshire | 6, Queen-street-place |
| Lead Hills .....*L* | 17/6 22/6 | 22/6 | 6 0 | 3/- Sep. '92 | 6 0 0 | 20,000 | Lanarkshire... | 30, Finsbury-circus. |
| Levant .....*CT* | — | — | * | 10/- Aug., '93 | 11 9 6 | 2,500 | Cornwall ..... | Penzance. |
| Lisburne .....*T* | — | — | 18 15 | 20/-, 1886. | 18 15 0 | 400 | Cardiganshire | 6, Queen-street-place. |
| Lovell .....*T* | — | — | * | 1/3 Nov., '91 | 1 12 7 | 7,200 | Wendron ... .... | 3, Gt. Queen-st., S.W. |
| Minera (New) ...*L* | — | — | 5 0 | 3/- Mar. '90 | 5 0 0 | 9,000 | Denbighshire. | Minera, N. Wales. |
| Nenthd'Tndle.*LZ* | — | — | 1 0 | 6% Feb., '91 | 1 3 6 | 48,875 | Northumberld. | Newcastle-on-Tyne |
| New Balleswidd'n *T* | — | — | 1 0 | — | 1 0 0 | 50,000 | Cornwall ..... | St. Clement's Ho., E.C |
| New Cooks Kitn. *TC* | — | — | * | — | 16 14 0 | 4,900 | Cornwall ..... | Camborne. |
| Pedn-an-dras ...*T* | — | — | * | — | 4 3 6 | 7,000 | Cornwall ..... | Redruth. |
| Phœnix United *TC* | 6/- 7/- | 7/- | * | 1/- Mar. '90 | 6 16 6 | 12,000 | Cornwall ..... | Liskeard. |
| Polberro & Trev. *T* | — | — | * | — | 1 11 6 | 18,000 | Cornwall ..... | 37, Walbrook. |
| Prince of Wales *TC* | 2/- 3/- | 6/3 | * | — | — | — | Cornwall ..... | 6, Draper's-gardens. |
| Roman Gravels *L* | — | — | 10/- | — | — | — | Salop ..... | 11, Queen Vic.-st., EC |
| Rushen .....*L* | — | — | 1 0 | 5% Sept. '91 | 1 0 0 | 28,131 | Isle of Man ... | Douglas. |
| So. Condurrow *TC* | 5/- 10/- | 10/- | * | 2/- Apr. '92 | 7 7 7 | 6,123 | Cornwall ..... | 20, Great St. Helens |
| South Crofty *TA* | 1¾ 2 | 2 | * | — | 18 13 0 | 6,120 | Cornwall ..... | Pool, Cornwall. |
| South Darren ... *L* | — | — | * | — | — | — | Cardiganshire | 6A, Austin Friars. |
| South Frances ...*T* | — | — | * | — | 15 10 6 | 6,000 | Cornwall ..... | Redruth. |
| Tincroft .....*T* | 11½ 12 | 12⅛ | * | 3/- Sep. '93 | 15 7 6 | 6,000 | Cornwall ..... | Carn Brea. |
| Weardale .....*L* | — | — | 4 0 | 1/3 Oct. '90 | 1 5 0 | 50,000 | Durham..... | 3, Lombard-court. |
| West Frances ...*T* | 1⅜ 1⅝ | 1⅝ | — | 2/6 May, '89 | 15 15 1 | 6,144 | Cornwall ..... | Camborne. |
| West Kitty .....*T* | 7¾ 8¼ | 8½ | * | 4/- Jan. '94 | 0 12 0 | 6,000 | Cornwall ..... | 37, Walbrook. |
| Wheal Agar ..*TA* | 2¾ 3¼ | 2¾ | * | 2/6 Aug. '88 | 22 0 8 | 6,000 | Cornwall ..... | Redruth. |
| Wheal Basset ...*TC* | 2 2½ | 3 | * | 10/- Apr. '85 | 11 19 6 | 6,144 | Cornwall ..... | Redruth. |
| Wheal Friendly..*T* | 2/6 5/- | 5/- | * | — | 0 11 3 | 10,000 | Cornwall ..... | 37, Walbrook, E.C. |
| Wheal Grenville *T* | 13½ 14 | 14½ | * | 5/- Oct. '93 | 17 10 0 | 6,000 | Cornwall ..... | 7, Union-court, E.C. |
| Wheal Kitty.....*T* | 10/- 15/- | 15/- | * | 5/- Mar. '88 | 7 9 6 | 4,295 | Cornwall ..... | Truro. |
| Wheal Metal &F.*T* | — | — | * | — | 0 10 9 | 12,000 | Cornwall ..... | 79½, Gracechurch-st |

## AUSTRALIAN AND NEW ZEALAND MINES.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Achilles Gld Fld | — | — | 1 0 | — | 1 0 0 | 80,307 | New Zealand | 3, Church Pas., E.C. |
| Aladdins Lamp *G* | — | — | 1 0 | — | 1 0 0 | 100,000 | N S Wales ... | 4-6, Throg. Avenue. |
| Anglo-Saxon ...*G* | — | — | 1 0 | 2/- July, '89 | 1 0 0 | 51,000 | Queensland .. | 4, Lombard-court. |
| Australasian .....*G* | 1/8 2/- | — | 1 0 | -/8 Mar., '92 | 1 0 0 | 210,000 | Queensland ... | 6, Queen-st, place |
| Australian .....*C* | — | — | 20 0 | 1/8 Aug. '93 | 7 7 6 | 18,315 | So. Australia | 18, Old Jewry Chbrs |
| Aus. Bro. Hill Con. | 1/9 2/3 | 2/3 | 1 0 | 1/- June, '91 | 1 0 0 | 540,000 | N. S. Wales ... | Winchester House. |
| Blue Spur & G. G. | — | — | 1 0 | — | 1 0 0 | 130,000 | New Zealand | 6, Gt. St. Helens' |
| Bonnie Dundee *G* | 2/9 3/- | 3/6 | 1 0 | — | 1 0 0 | 120,000 | Queensland .. | 3-5 Gracechurch-st |
| Brilliant Block...*G* | — | — | — | — | 1 0 0 | 100,000 | Queensland ... | 7, Gracechurch-st. |
| Brit. Brok. Hill *S* | 3/6 4/6 | 5/- | 5 0 | — | 5 0 0 | 240,000 | N. S. Wales ... | Abchurch Chambers. |
| Broken Hill Prop. | 2¹¹/₁₆ 2¹³/₁₆ | 2¹³/₁₆ | 0 8 | 2/- May, '93 | 0 8 0 | 960,000 | N. S. Wales ... | Abchurch Chambers. |
| Carrington.....*G* | — | — | — | — | 0 12 6 | 100,000 | Queensland ... | 9, Tokenhouse Yard. |
| Coromandel .....*G* | — | — | 1 0 | — | 0 5 0 | 95,000 | India ..... | 6-7, Queen-street-pl. |
| Craven's Cal. ..... | 4/- 5/- | — | 6 0 | — | 0 4 6 | 100,000 | Queensland... | 30 1, 8 Swithin's-la. |
| Cumbrind (New)*G* | 1/- 2/- | 2/- | 1 0 | 2/6 Dec. '87 | 0 19 0 | 200,000 | Queensland ... | Blomfield House. |
| DayDawn B.&W.*G* | 4/3 4/9 | 4/9 | 1 0 | -/6 Mar. 93 | 1 0 0 | 498,400 | Queensland ... | 3-5, Gracechurch-st. |
| Day Dawn P. C. *G* | 5/3 6/3 | 6/3 | 1 0 | -/6 Apr. '92 | 1 0 0 | 490,000 | Queensland ... | Winchester Ho., E.C. |
| Eaglehawk.....*G* | 1/3 1/9 | 1/9 | 1 0 | — | 0 18 3 | 120,000 | Victoria..... | 31, Lombard-street. |
| Etheridge .....*G* | — | — | 5 0 | — | 0 5 0 | 324,780 | Queensland ... | 6-7, Queen-street-pl. |
| Golden Gate.....*G* | — | — | 10/- | — | 0 10 0 | 150,000 | Queensland.. | 9, Tokenhouse Yard |
| Harrietville .....*G* | — | — | 1 0 | -/6 July, '90 | 1 0 0 | 146,330 | Victoria..... | 6-7, Queen-street-pl. |
| Kaboonga .....*G* | -/9 1/- | 1/- | 1 0 | — | 1 0 0 | 250,000 | Queensland .. | 30, St. Swithin's-la. |
| Kangarilla .....*S* | 1/3 1/9 | 1/9 | 1 0 | — | 0 18 6 | 88,275 | So. Australia | 68, Coleman-street, |
| Kapanga.....*G* | -/6 -/9 | 1/- | 1 0 | -/6 Jan. '91 | 0 18 9 | 250,000 | N. Zealand ... | 9, New Broad-street |
| Midas G. F. .....*G* | — | — | 1 0 | — | 1 0 0 | 180,000 | Victoria..... | 32, Poultry, E.C. |
| Mills' Day Dawn*G* | 1¹/₁₆ 1¼ | — | 1 0 | — | 0 15 9 | 300,000 | Queensland .. | 3, Gracechurch-st. |
| Moruya .....*GS* | — | — | 1 0 | — | — | 59,235 | N. S. Wales ... | 16, St. Helen's-place. |
| Mosman .....*G* | 4/- 4/8 | 4/9 | 1 0 | -/3 Jan. '93 | 1 0 0 | 185,000 | Queensland ... | 3, Gracechurch-st. |
| Mt. Leyshon .....*G* | 1/- 1/6 | 1/6 | 1 0 | -/6 Dec. '90 | 1 0 0 | 157,989 | Queensland ... | 7, Draper's-gardens. |
| Mountain Maid *G* | 1/8 2/6 | — | 10/- | — | 0 8 3 | 28,070 | Queensland... | Leadenhall Bldgs. |
| Mt. Morgan Ex. *G* | 2¹/₁₆ 2¹/₁₆ | 2¹/₁₆ | 5/- | — | 0 2 0 | 180,000 | Queensland ... | 4, Tokenhouse Bldgs |
| Mt. Shamrock *GB* | — | — | 1 0 | — | 1 0 0 | 275,000 | Queensland ... | 13, Basinghall-st E.C |
| Mount Zeehan..... | — | — | 1 0 | — | 0 18 0 | 193,257 | Tasmania ..... | Mansion Ho. Cham. |
| New Queen .... *G* | 8/- 9/- | 8/6 | 1 0 | -/6 Oct. '93 | 0 19 6 | 188,915 | Queensland ... | 30, St. Swithin's-la. |
| Port Phillip .....*G* | — | — | 0 5 | — | 0 5 0 | 43,359 | Victoria ..... | 57, Moorgate-st., E.C |
| Queen's Bthdy Un. | — | — | 1 0 | — | 0 3 0 | — | Victoria ..... | 7-8, Gt. Winchester St. |
| Tasmanian Silver .. | — | — | 1 0 | — | 1 0 0 | 75,180 | Tasmania ..... | 80, Coleman-st., E.C. |
| Victory.....*G* | — | — | 5 0 | — | 0 5 0 | 200,000 | Queensland... | 32, Fresham-st., E.C. |
| Walhi.....*G* | 20/- 25/- | — | 1 0 | — | 1 0 0 | 150,000 | New Zealand | 11, Abchurch-la. E.C. |
| Wentworth Ord.*G* | 4/- 5/- | 5/- | 1 0 | 6/- Jan. '93 | 1 0 0 | 500,000 | N. S. Wales ... | 4-6, Throgmort. Ave. |

## INDIAN AND ASIATIC MINES.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Bangalore Mysore*G* | 7/6 8/6 | 8/3 | 1 0 | — | 1 0 0 | 160,000 | India ..... | 6-7, Queen-street-pl. |
| Burma Ruby.....*R* | 2/9 3/3 | 3/9 | 1 0 | — | 0 17 0 | 300,000 | Burmah ..... | Suffolk House, E.C. |
| ChampionReef...*G* | 3¹/₁₆ 3¹/₁₆ | 3¹/₁₆ | 1 0 | — | 1 0 0 | 200,000 | India ..... | 6-7, Queen-street-pl. |
| Colar Central ...*G* | -/6 -/9 | -/9 | 1 0 | — | 1 0 0 | 200,000 | India ..... | Dashwood Ho., E.C. |
| Coromandel..... *G* | — | — | 1 0 | — | 0 10 0 | 120,000 | India's ..... | 6-7, Queen-st.-place. |
| Devàla Moyar ...*G* | — | — | 1 0 | — | 1 0 0 | 200,000 | India ..... | 34, Nicholas-lane. |
| Gemming&Mining | — | — | 2 0 | — | 1 7 6 | 24,456 | Ceylon ..... | 183, Gresham House |
| GoldFldsMysore*G* | 20/- 21/- | 20/6 | 1 0 | 1/- July '92 | 1 0 0 | 220,000 | India ..... | 6-7, Queen-street pl. |
| Gold Fids Siam *G* | — | — | 1 0 | — | 1 0 0 | — | Siam ..... | 19, St. Swithin's-lane. |
| Hyderabad Dec... | — | — | 10 0 | — | 10 0 0 | 1,000,000 | Deccan ..... | 18, St. Helen's-place. |
| Kempinkote GdFd | — | — | 5 0 | — | 0 5 0 | 698,650 | India ..... | 6-7, Queen-st.-place. |
| Kempin'tote .....*G* | 1/- 1/8 | — | 5 0 | — | 0 5 0 | 653,477 | Mysore ..... | 6-7, Queen-st.-place. |
| Mysore .....*G* | 3 3¼ | 3¼ | 1 0 | 3/6 Oct. '93 | 1 0 0 | 225,000 | India ..... | 6-7, Queen-street pl. |
| Mysore Reefs ...*G* | 6/8 7/6 | 8/- | 1 0 | — | 0 19 0 | 200,000 | India ..... | 6-7, Queen-street-pl. |
| Mysore West ...*G* | 5/6 6/- | 6/6 | 1 0 | — | 0 19 6 | 130,000 | India ..... | Dashwood Ho., E.C. |
| Mysore Wynaad *G* | 2/- 2/6 | 2/9 | 1 0 | — | 1 0 6 | 250,000 | India ..... | Dashwood Ho., E.C |
| Nine Reefs .....*G* | 1/- 1/6 | 1/6 | 1 0 | — | 0 10 0 | 250,000 | India ..... | 6-7, Queen-street-pl. |
| Nundydroog.....*G* | 1⅝ 1¾ | 1¾ | 1 0 | 1/6 Aug. '93 | 1 0 0 | 200,000 | India ..... | 6-7, Queen-street-pl. |
| Ooregum (Def.O.)*C* | 4¾ 4⅝ | 4⅝ | 1 0 | 3/6 Dec. '93 | 1 0 0 | 145,000 | India ..... | 6-7, Queen-street-pl. |
| Do. (10% Pref.). | 8 8¼ | 8¼ | 1 6 | 3/6 Dec. 93 | 1 0 0 | 120,000 | India ..... | 6-7, Queen-street-pl. |
| Pahang Corpn. ... | 3/- 5/- | 5/- | 1 0 | — | 1 0 0 | 200,000 | Malay Penin. | Blomfield Ho., E.C. |
| Pahang Kabang... | — | — | — | — | 1 0 0 | 134,000 | Malay Penin. | 4a, Jeffrey's sq., E.C. |
| South E. Mysore*G* | 4/- 4/6 | 4/6 | 4 6 | — | 0 3 3 | 130,000 | India ..... | 6-7, Queen-street-pl. |

## EUROPEAN MINES.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Alamillos .....*L* | 10/- 18/- | 15/- | 1 0 | 1/6 Mar. '92 | 1 0 0 | 80,357 | Spain ..... | 6, Queen-street-place |
| Argentella .....*C* | — | — | 1 0 | — | 1 0 0 | 133,165 | Corsica ..... | 16, Philpot-lane. |
| Bratsberg .....*C* | ⅛ | ⅛ | 1 0 | — | 0 18 0 | 120,000 | Norway ..... | 1, Gresham-buildings |
| English Cr. Spelter | ⅝ ⅞ | ⅞ | 1 0 | 5% Dec. '92 | 1 0 0 | 84,000 | Lombardy ..... | 9, Queen-street-place |
| Fortuna ... ..... *L* | 17/6 17/6 | 17/6 | 2 0 | 1/3 Mar. '92 | 2 0 0 | 25,000 | Spain ..... | 6, Queen-street-place |
| Libiola.....*C* | 3¹/₁₆ 3¹/₁₆ | 3⅛ | 5 0 | 2/6 Sept. '93 | 5 0 0 | 60,000 | Italy ..... | Dashwood Ho., E.C. |
| Linares .....*L* | 3 3¼ | 3⅛ | 5 0 | 5/- Sep. '93 | 3 0 0 | 15,000 | Spain .. ..... | 6, Queen-street-place |
| Marbella .....*I* | 54/- | 51/- | 10 0 | 5% Aug. '91 | 10 0 0 | 25,000 | Spain ..... | 78, Queen Victori a-st |
| Mason & Barry...*C* | 47/6 | 2¹/₁₆ | 10 0 | 2/- Oct. '91 | 5 0 0 | 125,172 | Spain ..... | 87, Cannon-street. |
| Oscar.....*G* | — | — | — | — | 0 4 6 | 117,240 | Norway ..... | 6A, Austin Friars. |
| Pestarena .....*G* | 1/8 2/- | 2/- | 3 0 | — | 3 0 0 | 67,109 | Italy ..... | 6-7, Queen-street-pl. |
| Pontgibaud.....*L* | 10 12 | 12 | 20 0 | 12½% Dec. '92 | 20 0 0 | 14,000 | France ..... | 6-7, Queen-street-pl. |
| Rio Tinto .....*C* | 14⁵/₁₆ 14⁹/₁₆ | 14¹¹/₁₆ | 12 0 | 7/- Nov., '93 | 10 0 0 | 325,000 | Spain ..... | 30, St. Swithin's-lane |
| Do. (Mort. Bonds) | 102 103 | 102½ | 100 0 | 5% Jan. '91 | 100 0 0 | 2,158,960 | Spain ..... | 30, St. Swithin's-lane |
| Do. (2nd do.) ..... | 100⅜ 101⅜ | 101 | 100 0 | 5% Jan. '91 | 100 0 0 | 1,127,180 | Spain ..... | 30, St. Swithin's-lane |
| Sipanji .....*SQ* | 5/- 7/- | 7/- | — | — | 0 19 0 | 80,000 | Servia ..... | Liverpool. |
| Tharsis.....*C Sul* | 4¾ 5 | 5⅛ | 2 0 | 15% Apr. '93 | 2 0 0 | 625,000 | Spain ..... | Glasgow. |
| West Prussian Pre. | 10 10¾ | 10¼ | 10 0 | 5% Jan. '93 | 10 0 0 | 5,450 | Germany ..... | Walbrook Ho., E.C. |
| West Prussian Ord. | 18 18 | 18 | 10 0 | 5% Jan. '93 | 10 0 0 | 14,056 | Germany ..... | Walbrook Ho., E.C. |

## NORTH AMERICAN MINES.

| Name. | Closing Price, Jan. 19, 1894 | Closing Price, Jan. 12, 1893. | Par. | Latest Dividend. | Called up per Share. | Shares Issued. | Situation of Mine. | Head Office. |
|---|---|---|---|---|---|---|---|---|
| | | | £ s. | | £ s. d. | | | |
| Almada and T...*S* | -/3 -/9 | -/9 | 2/6 | — | 0 2 6 | 351 008 | Mexico ..... | 5, Queen-street-place |
| Amador .....*G* | -/3 -/6 | -/6 | 1 0 | -/8 Aug. '90 | 1 0 0 | 250,000 | California ..... | 6, Draper's-gardens. |
| American Belle...*S* | 1/9 2/3 | 2/3 | 1 0 | -/6 Mar. '91 | 1 0 0 | 400,000 | Colorado ..... | 25A, Old Broad-street. |
| Arizona .....*C* | 8/3 8/6 | 8/6 | 5 0 | — | 5 0 0 | 791,000 | Arizona ..... | Edinburgh. |
| Canadian Phos. *P* | ¾ ⅞ | ¾ | 1 0 | -/6 Nov.,'90 | 1 0 0 | 73,334 | Canada ..... | 155, Fenchurch-st. |
| Colorado Silver...*S* | ⅛ | ⅛ | 1 0 | — | 1 0 0 | 325,000 | Colorado ..... | Abchurch-chbrs, E.C. |
| De Lamar.....*GS* | 23/6 24/6 | 23/6 | 1 0 | 1/- Oct. '93 | 0 19 9 | 420,000 | Idaho ..... | 6, Draper's-gardens. |
| Dickens Custer*GS* | -/2 -/4 | -/4 | 1 0 | — | 0 19 0 | 420,000 | Idaho..... | Winchester Ho. E.C. |
| Elkhorn .....*S* | 9/6 10/6 | 11/- | 1 0 | 1/- Dec, '93 | 1 0 0 | 175,000 | Montana ..... | 6, Draper's-gardens. |
| Emma .....*S* | -/3 -/9 | -/9 | 5 0 | — | 0 5 0 | 367,788 | Utah ..... | 15, Geo-st, Mansn. Ho |
| Flagstaff .....*S* | -/3 -/5 | -/6 | 1 0 | — | 1 0 0 | 240,000 | Utah ..... | Dashwood Ho., E.C. |
| Garfield .....*GS* | — | — | 1 0 | -/8 Dec. '88 | 0 19 6 | 98,185 | Nevada ..... | Suffolk House, E.C. |
| Golden Feather *G* | — | — | 1 0 | — | 1 0 0 | 192,001 | California ... | St. Stephen's Ch E.C. |
| Golden Gate..... | — | — | 1 0 | — | 1 0 0 | 79,525 | California ... | St. Stephens Ch E.C. |
| Golden Leaf..... *G* | -/9 1/3 | — | 1 0 | — | 1 0 0 | 300,259 | Montana ..... | 3, Draper's Gardens. |
| Golden Valley...*G* | 2/6 4/- | — | 1 0 | — | 1 0 0 | 55,507 | Colorado ..... | 15, Angel Court. |
| Harquahala.... *G* | 15⁄16 ⅞ | — | 1 0 | — | 1 0 0 | 290,000 | Arizona ..... | 6, Drap's Gardens. |
| Holcomb Valley *G* | -/6 -/9 | — | 5 0 | — | 0 5 0 | 540,000 | California ... | 14, Cornhill E.C. |
| Idaho.....*GS* | -/3 -/6 | — | 1 0 | — | 1 0 0 | 224,967 | Idaho ..... | 140, Le denhall-st. |
| Jackson Goldfields | — | — | 5 0 | — | 0 5 0 | — | California ..... | 6, Drapers' Gardens. |
| Jay Hawk .....*G* | 7/6 8/6 | 8/6 | 1 0 | -/6 Dec. '92 | 1 0 0 | 285,000 | Montana ..... | Dashwood House, |
| Kohinoor "B"*GS* | — | — | 1 0 | -/8 June.'81 | 1 0 0 | 112,901 | Colorado ..... | Blomfield Ho., E.C. |
| La Plata.....*S* | -/8 -/9 | -/9 | 5/- | 1/3 Oct. '82 | 0 4 0 | 405,000 | Colorado ..... | 11, Poultry, E.C. |
| Mammoth Gold ... | — | — | 1 0 | — | 1 0 0 | 400,000 | Final Arizona. | 257, Winchester Ho. |
| Mesq. d'l Oro (P) *G* | 1 1½ | 1½ | 5 0 | — | 5 0 0 | 10,000 | Mexico ..... | Dashwood Ho., E.C. |
| Mesq. d'l Oro (D) *G* | ¾ ⅞ | ⅞ | 5 0 | — | 5 0 0 | 10,000 | Mexico ..... | Dashwood Ho., E.C. |
| Montana ..... ..... | 7/6 8/- | 7/6 | 1 0 | 5% April '91 | 0 19 0 | 660,000 | Montana ..... | Gresham House, E.C. |
| N.Consolidated*SC* | — | — | 5/- | — | 1 0 0 | 160,000 | Eberhardt, U.S | 19A, Coleman-street. |
| N. Eberhardt.....*S* | ⅝ | ⅝ | 5/- | — | 0 3 6 | 248,576 | Nevada ..... | 15, Angel-court, E.C. |
| N. Gold Hill.....*G* | — | — | 1 0 | — | 0 19 9 | 191,045 | N. Carolina ... | 15, George-st., E.C. |
| New Guston .....*S* | ⅜ ⅝ | 10/- | 1 0 | 1/- Oct. '92 | 1 0 0 | 110,000 | Colorado ..... | 25A, Old Broad-st. |
| N. Hoover Hill...*G* | — | — | 10/- | -/9 Dec. '85 | 0 10 0 | 120,000 | N. Carolina ... | Langthorne Ho., E.C. |
| New Russell .....*G* | — | — | 2 0 | — | 0 2 0 | 422,564 | N. Carolina ... | Blomfield House, E.C. |
| Pachuca (New)...*S* | — | — | 1 0 | — | 0 17 0 | 45,424 | Mexico ..... | Sunderland. |
| Palmarejo .....*GS* | 1/3 1/9 | 1/6 | 1 0 | — | 1 0 0 | 418,888 | Mexico ..... | 4, Copthall-buildings |
| Parker, G. Ord. ... | — | — | 0 10 | — | 0 10 0 | 178,243 | N. Carolina ... | 80, Cornhill. |
| Parker, G. Pre. ... | — | — | 0 5 | — | 0 5 0 | 226,967 | N. Carolina . | 80, Cornhill. |
| Pinos Altos.....*GS* | — | — | 1 0 | -/6 Mar.' 90 | 1 0 0 | 300,000 | Mexico ..... | 110, Cannon-street. |
| Pittsburg Con. *G* | — | — | 1 0 | 1/6 Mar. '88 | 1 0 0 | 77,147 | Nevada ..... | Suffolk House, E.C |
| Red Mountain ...*S* | — | — | 1 0 | — | 1 0 0 | 46,666 | Colorado ..... | 11, Poultry, E.C. |
| Richmond ...*GSL* | ⅜ ⅝ | 7⁄16 | 5 0 | 1/- Sep. '93 | 5 0 0 | 54,000 | Nevada ..... | 44, Coleman-street. |
| Ruby ..... .....*GSL* | — | — | 5/- | — | 0 5 0 | 221,371 | Nevada ..... | 22 St. Mary Axe. |
| Sam Christian...*G* | — | — | 1 0 | — | 1 0 0 | 200,000 | N. Carolina ... | 1, Queen Victoria-st. |
| Sierra Butter ...*G* | ¾ ⅝ | 9/- | 2 0 | -/6 Oct, '93 | 2 0 0 | 122,500 | California ..... | 138, Leadenhall-st. |
| Springdale.....*G* | 2/6 3/6 | — | $1 | — | $1 | 1,000 000 | Colorado ..... | 20, Abchurch Lane. |
| Do. Plumas Eur. *G* | 13/- 15/- | 15/- | 2 0 | -/9 April,'92 | 2 0 0 | 140,265 | California ..... | 138, Leadenhall-st. |
| United Mexican *S* | 1/- 1/6 | 1/6 | 1 0 | 2/6 May, '87 | 1 0 0 | 908,654 | Mexico ..... | 3, Gt. Winchester st. |
| Viola (New)..... | — | — | 1 0 | — | 1 0 0 | 150,000 | Idaho ..... | Broad-st. House, E.C. |

## SOUTH AND CENTRAL AMERICAN MINES.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Antio. (Pref.) *G.S.* | — | — | 1 0 | -/6 Mar. '90 | 1 0 0 | 42,453 | Colombia ..... | 184, Gresham House |
| Antioquia (ordiny) | — | — | 1 0 | — | 1 0 0 | | Colombia ..... | 184, Gresham House |
| Callao Ele... .....*G* | -/8 -/9 | 1/- | 1 0 | — | 1 0 0 | 320,000 | Venezuela ... | 50, Old Broad-street. |
| Camerones..... *C* | — | ⅜ | 2 0 | — | 2 0 0 | 67,000 | Chili ..... | 123, Bishopsgt. Wn. |
| Caratal..... *G* | — | — | 2 6 | — | 0 2 4 | 542,500 | Venezuela ... | 57, Moorgate-st. E.C. |
| Coton ..... .....*G* | -/9 1/- | 1/- | — | — | 1 0 0 | 200,000 | Colombia ..... | 5, Copthall-bdgs., E.C. |
| Colorado Nit. ...*N* | 1¾ 1⅝ | 2⅛ | 5 0 | 7/8 May, '89 | 5 0 0 | 32,000 | Chili ..... | 12, King-st., Liverp'l. |
| Colombian Hy. .*G* | 14/- 15/- | 15/6 | 1 0 | 1/- Dec. '93 | 1 0 0 | 75,000 | Colombia ..... | 10, Blomfield-street. |
| Copiapo .....*C* | 1¹¹/₁₆ 1¹³/₁₆ | 1¹¹/₁₆ | 2 0 | 2/- June, '93 | 2 0 0 | 100,000 | Chili ..... | Dashwood House, E.C. |
| Darien.....*G* | — | — | 1 0 | — | 1 0 0 | 71,359 | Colombia ..... | Manchester. |
| Don Pedro.....*G* | 7⁄16 9⁄16 | — | 1 0 | — | 1 0 0 | 133,102 | Brazil ..... | 24-5, Devonsh.Ca E.C |
| El Callao .....*G* | 14/- 16/- | 11⁄16 | 5 0 | 2 fro. Nov.,'90 | 5 0 0 | 257,600 | Venezuela ... | 8, Bishopsgt.-st, Wn. |
| Frontino & B....*G* | 19/- 20/- | 20/- | 1 0 | -/6 Oct. '93 | 0 19 6 | 128,662 | Colombia ..... | 184, Gresham House. |
| Glenrock .....*G* | 2/- 2/6 | — | 1 0 | — | 1 0 0 | 199,948 | Argen. (& Ind) | 3-5, Queen-street, E.C |
| Glenrock (Pref.)... | — | — | 1 0 | — | 0 16 0 | 16,232 | Argen. (& Ind) | 3-5, Queen-street, E.C |
| Gravel.....*G* | 4/- 5/- | 4/6 | 1 0 | — | 1 0 0 | 100,000 | Colombia ..... | 10, Blomfield-street. |
| Javali .....*G* | — | — | 2/- | 12½% June'90 | 0 2 0 | 105,234 | Nicaragua..... | 139, Cannon-street. |
| Julia Nit. .....*N* | 2/- 4/- | 4/- | 5 0 | — | 5 0 0 | 22,000 | Chili ..... | 70¼, Gracechurch-st. |
| Lautaro .....*N* | 3 3½ | 3¼ | 10 0 | 10/-Sep. '89 | 10 0 0 | 25,000 | Chili ..... | 70, Gracechurch-st. |
| Liverpool .....*N* | 7⅛ 8¼ | 8¼ | 5 0 | 15/- Aug. '89 | 5 0 0 | 22,000 | Chili ..... | Liverpool. |
| Loma .....*G* | 1/- 1/6 | 1/9 | 1 0 | — | 1 0 0 | 300,000 | Colombia ..... | 5, Copthall-buildings |
| London Nit.....*N* | ¾ ⅞ | ⅞ | 5 0 | 30% Feb. '89 | 5 0 0 | 10,000 | Chili ..... | 9, Gracechurch-st. |
| London Nit.(Pref.) | — | — | 5 0 | 15% Feb. '89 | 5 0 0 | 22,000 | Chili ..... | 9, Gracechurch-st. |
| Macate ..... | — | — | 0 2 | — | 0 2 0 | 200,000 | Peru ..... | 11, Old Broad-st.E.C. |
| Orita .....*G* | 2/6 3/- | 3/- | 1 0 | 1/- April '89 | 1 0 0 | 30,000 | Colombia ..... | 10, Blomfield-street. |
| Ouro Preto... ....*G* | — | — | 4 0 | — | 4 0 0 | 80,000 | Brazil .... ... ... | 6, Queen-street-place |
| Panulcillo .....*C* | ⅛ | ⅛ | 2 0 | 1/- Nov. '89 | 2 0 0 | 112,500 | Chili ..... | 13, Great St. Helens. |
| Primitiva .....*N* | 3¾ 3⅝ | 4 | 5 0 | 20% Oct. '89 | 5 0 0 | 40,000 | Chili ..... | Liverpool. |
| Quebrada.....*C* | 1³/₁₆ 1⁵/₁₆ | 1⁵/₁₆ | 3 0 | — | 3 0 0 | 306,447 | Venezuela ... | 38, Nicholas Lane. |
| Rosario .....*N* | 3½ 4 | 4 | 5 0 | 2½% Oct.'90 | 5 0 0 | 80,000 | Chili ..... | 57¼, Old Broad-street. |
| Rosario (6% Deb.) | — | — | 100 0 | — | 100 0 0 | 649,200 | Chili ..... | 57¼, Old Broad-street. |
| St. John del Rey *G* | 20/- 21/- | 21/6 | 1 0 | 10% June '82 | 1 0 0 | 269,982 | Brazil ..... | 28, Tower-chmbrs, E.C. |
| San Donato ... ...*N* | 1 1½ | 1½ | 5 0 | — | 5 0 0 | 32,000 | Chili ..... | 12, King-st., Liverp'l. |
| San Jorge .....*N* | 5 5¼ | 5 | 5 0 | 10/-May '92 | 5 0 0 | 75,000 

## "THE MINING JOURNAL" SHARE LIST (African Mines continued).

| Name. | Closing Price, Jan. 19, 1894 | Closing Price, Jan. 12, 1894. | Par. | Latest Dividend. | Called up Per Share. | Shares Issued. | Situation of Mine. | Head Office. |
|---|---|---|---|---|---|---|---|---|
| | | | £ s. | | £ s. d. | | | |
| Joe's Luck.....G | 4/6 5/6 | 4/6 | 1 0 | — | 0 16 0 | 57,464 | De Kaap ..... | 11, Queen Vic.-st. |
| Jubilee .....G | 6¾ 7 | 7 | 1 0 | 30% Oct. '93 | 1 0 0 | 20,000 | Witwatersrdt. | 8, Old Jewry.† |
| Jumpers .....G | 3½ 3⅝ | 4¼ | 1 0 | 10% Jan. '93 | 1 0 0 | 100,000 | Witwatersrdt. | 29, Holborn Viaduct.†† |
| Kleinfontein .G | 5/6 6/6 | 6/6 | 1 0 | — | 1 0 0 | 150,000 | Witwatersrdt. | 8, Old Jewry |
| Klerksdorp ....G | — | — | 1 0 | — | 1 0 0 | 180,000 | Transvaal ..... | 110, Cannon-street. |
| Knight .....G | 17/- 18/- | 18/- | 1 0 | — | 1 0 0 | 250,000 | Witwatersrdt. | 19, Bury-street, E.C. |
| Langlaagte Est. G | 3⅝ 4⅛ | 4⅛ | 3 0 | 20% July, '92 | 1 0 0 | 447,000 | Witwatersrdt. | 59, Holborn Viaduct. |
| Lisbon-Berlyn ..G | 2/- 2/6 | 2/6 | 2 6 | — | 1 2 6 | 829,950 | Lydenburg ... | 110, Cannon-street. |
| Luipaards Viei Est. | 7/6 8/6 | 8/- | 1 0 | 6% Mar. '90 | 1 0 0 | 344,903 | Witwatersrdt. | 8, Old Jewry. |
| Main Reef.....G | 4/- 5/- | 4/6 | 1 0 | — | 1 0 0 | 300,000 | Witwatersrdt. | Warnford-court.† |
| Manica Ophir ..... | — | — | 1 0 | — | 1 0 0 | 98,000 | Mozambique.. | 2, Pinner's Court. |
| May Consol. .... | 10/- 11/- | 11/- | 1 0 | — | 1 0 0 | 430,000 | Witwatersrdt. | 4, Lothbury.† |
| May Deep Level G | — | — | 1 0 | — | 1 0 0 | 146,000 | Witwatersrdt. | 31, Cornhill, E.C. |
| Metropolitan .....G | 13/9 :6/3 | 15/- | 1 0 | — | — | 75,000 | Witwatersrdt. | 1, Crosby Square.† |
| Meyer & Charl....G | 5¾ 5⅜ | 5 | 1 0 | 35% July '93 | 1 0 0 | 71,687 | Witwatersrdt. | Warnford-court.† |
| Mitchell .....G | — | — | 1 0 | — | 1 0 0 | 45,000 | Witwatersrdt. | Kimberley. |
| Modderfontein..G | 5/6 6/6 | 6/6 | 1 0 | — | 1 0 0 | 200,000 | Witwatersrdt. | Warnford-court.† |
| Moodies G.&E....G | 6/- 7/- | 7/- | 1 0 | -/4 May '90 | 1 0 0 | 240,000 | De Kaap ..... | 8, Old Jewry.† |
| Moodies (15/- p.)G | — | — | 1 0 | — | 0 10 0 | 120,000 | De Kaap ..... | 8, Old Jewry. |
| Namaqua .....C | 17/6 22/6 | 22/6 | 2 0 | 2/6 July '91 | 2 0 0 | 188,862 | Namaqualand. | 34, Leadenhall-bldg. |
| New Chimes..... G | 1¾ 1¼ | — | 1 0 | — | 1 0 0 | 59,123 | Witwatersrdt. | 8, Old Jewry, E.C. |
| New Croesus..... G | 1⅛ 1¾ | — | 1 0 | — | 1 0 0 | 195,000 | Langlaagte .. | 4, Bishopsgt.-st. Wt. |
| New Jagersf. ...D | 14½ 14⅞ | 15½ | 10 0 | — | 10 0 0 | 783,000 | Transvaal ..... | 5, Copthall-buildings |
| New Primrose ...G | 3¾ 4 | 4 | 1 0 | 4/- July, '93 | 1 0 0 | 230,000 | Witwatersrdt. | 2, Draper's-gardens. |
| Nigel .....G | 2¾ 3 | 2⅞ | 1 0 | 15% Sept. '93 | 1 0 0 | 160,000 | Witwatersrdt. | 1, Crosby-square. |
| Noottgedacht E. G | — | — | 1 0 | — | 1 0 0 | 160,000 | Lydenburg .. | 8, Old Jewry. |
| Oceana ..... | 1⅜ 1⅝ | 1⅝ | 1 0 | 25/- Nov. '89 | 1 0 0 | 150,000 | Transvaal ..... | 4, San Court, E.C. |
| Ophir Concess. ... | — | — | 1 0 | — | 0 18 0 | 111,857 | E. CoastAfrica | 31, Lombard-street. |
| Orange F.S.E. ...D | 3¼ 3¾ | 3¼ | 1 0 | — | 1 0 0 | 284,000 | OrangeF.State | 10, Moorgate-street. |
| Oriental ..... | 1/8 2/- | 2/- | 1 0 | — | 1 0 0 | 373,040 | De Kaap ..... | Jamaica-bgs.Cornhill |
| Otto's Kopje.....D | 1/- 1/8 | 1/8 | 1 0 | — | 0 19 3 | 500,000 | Kimberley ... | 110, Cannon-st.,E.C. |
| paarl Central... G | — | — | 1 0 | — | 1 0 0 | 138,750 | Transvaal ..... | 29-30, Hol. Vis., E.C. |
| Piggs Peak .....G | -/3 -/9 | -/9 | 1 0 | — | 1 0 | 230,326 | Swaziland ... | 8, Queen-street-place. |
| Potchefstoom... G | — | — | 1 0 | — | 1 0 0 | 161,000 | Potchefstroom | 19, Bury-st., E.C. |
| Princess Estate G | — | — | 1 0 | — | 1 0 0 | 72,048 | Witwatersrdt. | 33, Cornhill, E.C. |
| Randfontein .....G | 10/- 11/- | 10/8 | 1 0 | — | 1 0 0 | 1,916,500 | Witwatersrdt. | 59, Holborn Viaduct.† |
| Read's Drift .....D | 4/8 5/6 | 5/6 | 1 0 | — | — | 50,000 | Transvaal ..... | 19, Finsbury-circus. |
| Robinson .....G | 4⅝ 4⅞ | 4⅞ | 5 0 | 4% June '93 | 5 0 0 | 543,750 | Transvaal ..... | 55, Holborn Viaduct†† |
| Roodepoort Un. G | — | — | 1 0 | — | 1 0 0 | 100,000 | Witwatersrdt. | Warnford-court.† |
| St. Augustine ...D | — | — | 1 0 | — | 1 0 0 | 465,000 | Griqualand W | 30-1, St. Swithin's-la |
| Salisbury New ...G | 2¾ 2⅝ | 2¼ | 1 0 | — | 1 0 0 | 93,000 | Witwatersrdt. | 1, Crosby-square.† |
| Sheba .....G | 15/- 16/- | 16/6 | 1 0 | -/6 Aug.. '93 | 1 0 0 | 814,450 | Lydenburg .. | 18, St. Helen's-place. |
| Silati .....G | -/3 -/6 | -/6 | 1 0 | — | 1 0 0 | 625,000 | Zoutpansberg. | 4, Sun Court, E.C. |
| Simmer & Jack...G | 3⅝ 4 | 4⅛ | 1 0 | 10% Nov '93 | 1 0 0 | 85,000 | Witwatersrdt. | 33, Cornhill. |
| S.A. Gold Trust ... | 12/- 13/- | 13/- | 1 0 | 100% Mar. '90 | 0 10 0 | 200,000 | South Africa.. | 8, Old Jewry. |
| Spitzkop .....G | 1/6 2/- | 2/- | 1 0 | — | 1 0 0 | 144,531 | Lydenburg ... | 15, Bishopsgt-st, Wt. |
| Stanhope .....G | 1⅝ 1¾ | 1⅝ | 1 0 | 50% May. '93 | — | 34,000 | Witwatersrdt. | 1, Crosby Square.† |
| Sutherland R. ...G | -/8 1/3 | 1/3 | 1 0 | — | 0 17 6 | 220,000 | Zoutpansberg. | 3, Budge-row, E.C. |
| Teutonia.....G | — | — | 1 0 | — | 1 0 0 | 100,000 | Witwatersrdt. | 8, Old Jewry. |
| Trans. Est. & Dev. | 7/6 8/6 | 8/6 | 1 0 | — | 1 0 0 | 285,700 | Transvaal ..... | 76, Old Broad-st. E.C. |
| Trans. Gold .....G | — | — | 1 0 | 1/- Dec, '92 | 1 0 0 | 250,000 | Transvaal ..... | Suffolk House, E.C. |
| Trans.Land(14/3p) | 1/- 1/6 | — | 1 0 | — | 1 0 0 | 250,695 | Transvaal ..... | 33, Cornhill. |
| Un. Ivy Reef.....G | 20/- 22/6 | — | 1 0 | — | 1 0 0 | 45,000 | Transvaal ..... | 110, Cannon-street |
| Un. Langlaagte ... | 11/3 13/9 | — | 1 0 | — | 1 0 0 | 69,594 | Witwatersrdt. | 23, St. Swithin's-la . |
| Van Ryn ..... G | 11/3 13/9 | 13/9 | 1 0 | — | — | 100,000 | Witwatersrdt. | 1, Crosby-square.† |
| Victory Hill .....G | — | — | 1 0 | — | 1 0 0 | 108,000 | De Kaap ..... | Portland House, E.C. |
| Village Main Reef | 3¼ 3⅜ | — | 1 0 | — | 1 0 0 | 132,000 | Witwatersrdt. | 8, Old Jewry. |
| Virginia .....G | — | — | 1 0 | — | 1 0 0 | 50,000 | Transvaal ..... | 28, Budge-row, E.C |
| Vogelstruis .....G | — | — | 1 0 | — | 1 0 0 | 150,000 | Witwatersrdt. | 34, Leadenhall-bldgs. |
| Wemmer .....G | 4⅝ 4⅞ | 4⅞ | 1 0 | 10% Nov. '91 | 1 0 0 | 55,000 | Witwatersrdt. | 19, Bury-street.†† |
| Witwatersrandt ... | — | — | 1 0 | — | 1 0 0 | 250,000 | Witwatersrdt. | 19, Bury-st., E.C. |
| Wolhuter .....G | 2⅜ 2⅝ | 2⅝ | 1 0 | — | 1 0 0 | 120,000 | Witwatersrdt. | Warnford-court.† |
| Worcester .....G | 1⅜ 1⅝ | 1⅝ | 1 0 | — | 1 0 0 | 90,727 | Witwatersrdt. | 8, Old Jewry.† |
| Zwartland Land ... | — | — | 1 0 | — | 0 16 0 | 150,000 | Transvaal ..... | 19, Birchin-lane,E.C. |

# COMPANIES AND THEIR DOINGS.

**Reports, Balance Sheets, Dividends, &c., of Mining, Railway, Banking, and other Companies.**

## MINING COMPANIES.

### Consolidated Gold Fields of South Africa.

THE following circular has been issued to the shareholders:—As the company has now taken its place among regular dividend paying corporations, the directors, feeling confident from the investments they have made that they can see substantial dividends for the company a long period ahead, are satisfied that the time has arrived for exercising the powers conferred by the Articles to issue debentures in order that the revenue earning capacity of the company may be increased. They have, therefore, resolved to issue £600,000 first debentures at the price of £95 per £100, bearing interest at the rate of 5½ per cent. per annum. The directors and their friends have subscribed £250,000 of the issue, thus practically assuring its success. £100,000 has, at the instance of the managing directors, been reserved for subscription in South Africa. The balance, viz., £250,000, is now available for subscription, and is firstoffered to the shareholders of the company. The proceeds of the debenture issue will be applied--(1) In redeeming temporary loans and current obligations of the company, which amount to about £150,000, investments having been made to that extent in excess of the capital of the company. (2) In providing further funds for the full equipment and development of the deep level properties in which the company holds large interests, such as the Village Main Reef Gold Mining Company (Limited), the Roodepoort Deep Level Gold Mining Company (Limited), the Champ d'Or Deep Level Gold Mining Company (Limited), and others, and in placing the company in a position to subscribe further working capital for deep level properties without selling its investments at their present low prices. (3) In acquiring additional interests in the Witwatersrandt district, promising offers of properties being now before the directors. I am directed to take this opportunity of informing you that the principal stocks held by the company continue to justify the remarks bestowed upon them by one of the managing directors, Mr. C. D. Rudd, at the last annual general meeting, and that the deep level properties give promise even sooner than was anticipated of returning dividends. The deep level claims exclusively owned by the company to the number of 514 have been sold for 300,000 fully paid shares of £1 each to the Gold Fields Deep (Limited), a company recently formed with a capital of £600,000, £150,000 working capital has been subscribed at par, and 150,000 shares are held in reserve. Of these claims 16 known as the Mexican block have already been contracted to be resold to the Rose Deep (Limited) on favourable terms, others —the adjoining Lincoln block of 29 claims —will be floated with a contiguous block owned by the Rand Mines (Limited), and the development of the block of 106 claims to the dip of the Robinson Mine is about to be vigorously proceeded with. With regard to the company's interest in the territories under the sphere of influence of the British South Africa Company, I have to inform you that the holding of about 1,100,000 United Concessions shares is about to be exchanged for about 250,000 shares of the British South Africa Company. In regard to the further interest of the company in the British South Africa Company, I have to inform you that it consists of two obligations taken over from the old Gold Fields of South Africa (Limited) the first of which was an agreement to advance the British South Africa Company £500 per month for a fixed period in exchange for debentures, and the second, to subscribe the sum of £75,000 towards the construction of the Vryburg Mafeking Railway, which obligation was undertaken in part consideration of securing the United Concessions shares now held. Instead of this £75,000 the company is taking its proportion of debentures of the British South Africa Company, viz., £50,000 on its 1,100,000 United Concession shares, and in return is receiving, as above stated, about 250,000 shares in the British South Africa Company. This arrangement, therefore, reduces the previous obligation of the company by the sum of £25,000, while the security is equally good. No other obligation rests upon this company to the British South Africa Company, and no further advances are in contemplation. In conclusion, I have pleasure in stating that the business of the company continues to progress satisfactorily, and that the profit for the half year to 31st December, 1893, subject to audit, exceeds the profit for the corresponding period of 1892. The directors later in the week informed us that the allotment of the debentures has taken place and that letters of allotment and regret will be posted as early as possible.

### May Consolidated Gold Mining Company.

The directors submit the following report for the month of November, 1893:—Mine. Number of tons of ore mined, 5325; number of tons of ore at grass, 4021.—Battery. Number of stamps at work, 50; actual time running, 28½ days; ore milled, 5325 tons; yield smelted gold, 2155 ounces; average yield per ton, 8·09 dwts.; average crushed per stamp per day, 3·77 tons; value of gold won say £7811 17s. 6d.—Analysis of expenditure. Mining and raising 5325 tons cost £2611 13s. 6d.=9s. 9·71d. per ton; tramming, 5325 tons cost £181 17s. 3d.=8·19d. per ton; milling, &c., 5325 tons cost £1526 1s. 11d.=5s 8·81d. per ton; development, £1208 6s. 3d.=4s. 6·45d. per ton—£5527 18s. 11d. =20s. 9·16d. per ton; expended on construction, &c., £535 12s. 11d.—£6063 11s. 10d.—Result. Gold won valued at £7811 17s. 6d.; concentrates sold, £501 17s. 3d.—£8313 14s. 9d. expended (less construction), £5527 18s. 11d.; n et profit for month, £2785 15s. 10d.

### Queen Cross Reef Gold Mining Company.

The half yearly report of the directors of this company, dated November 28, 1893, stated that since the last meeting operations have been constantly carried on in the old formation, and 626 tons of stone have been extracted for a yield of 934 ounces 14 dwts. 6 grains of gold, and the tributors have obtained 69 ounces 8 dwts. 6 grains from 83 tons. The stopes over No. 1 level have been worked out, but there is still a nice block above No. 5 level north, from which 300 to 400 tons should be obtained of good quality. At the date of last report stoping was being carried on by means of an underhand stope from No. 4 level, and in putting down a winze to prove the extent of the shoot some excellent stone was discovered, which led to the extension of No. 5 level to the boundary, a distance of about 10 feet. The latest crushing was extracted from No. 5 level stopes, and 208 tons put through gave a return of 385 ounces 11 dwts. 18 grains. On the south side of the underlie No. 3 level has been advanced a further distance of 194 feet, making a total of 274 feet, with no change of any importance. The original estimate to the Victory upper reef was 924 feet, but late developments in adjoining mines have thrown more light on the subject and given fresh data, which makes the probable depth about 900 feet. It is also probable that the Victoria shaft and Queen reef (in that company's shaft at 512 feet vertical depth) will be met in your shaft before the Victory. The crushing previous to the last went only about 18 dwts. per ton, and your directors deemed it advisable to make a call of 2d. per share, in order that no financial difficulties might embarrass the company. The last crushing having gone so well, and from the appearance of the stopes over No. 5 level, your directors hope to be able to bottom the shaft without making any more calls.

### Frontino and Bolivia Gold Mining Company.

The directors have received advices from the mines dated 22nd November and 7th December, 1893, also a letter from Messrs. Restrepo, dated 11th November. The statement for the month of November is as follows:—2475 tons produced—Bullion, 2603 ounces; tributers' gold produced—Bullion, 64 ounces; total, 2667 ounces; Also, 38,824 lbs. of sulphurets, valued at £862 12s. Estimated value of the gold and sulphurets, £6262 10s. 5d.; cost at the mines, Medellin, and in London, £4591 0s. 10d.; estimated excess of returns, £1671 9s. 7d. The intrinsic value of the gold has again improved, and the sulphurets are again of slightly greater value. The damage done by the recent extremely heavy rains has been repaired, and all the machinery was in good working order at the date of the last dispatch.

— The BROKEN HILL PROPRIETARY COMPANY (LIMITED) reports that for the week ending the 18th inst. 8761 tons of ore were treated, yielding 839 tons of lead containing 256,259 ounces silver. The price of the shares in Melbourne is £2 13s. buyers.

— The transfer registers of the RAND MINES (LIMITED) will be closed from the 1st to the 7th of February, both days inclusive.

— The MOSMAN GOLD MINING COMPANY (LIMITED), notifies that the warrants for the interim dividend payable last Thursday, have been posted.

## RAILWAY COMPANIES.

### Metropolian Railway Company.

The report of the directors of the Metropolitan Railway Company states that the total receipts for the half-year ended December 31, 1893 (deducting this company's proportion of the revenue of the City lines and extensions) have been £349,267 and the expenses £152,021, leaving a profit of £197,246. The receipts show a decrease of £10,058 and the expenses an increase of £625 as compared with the corresponding half-year of 1892. The net revenue, after providing for the interest upon the debenture stocks and other fixed charges, shows a balance of £139,655, which will suffice for the dividends upon the preference and guaranteed stocks, and leave a sum of £67,515 available for dividend upon the ordinary stock. The directors recommend a dividend upon the ordinary stock for the half-year at the rate of 2½ per cent. per annum, and to carry forward the balance of £1492 to the next half-year's accounts. The Surplus Lands committee announces that the dividend on the Surplus Lands Stock for the past half-year willl be at the rate of 2½ per cent. per annum.

### London, Brighton, and South Coast Railway Company

The report of the directors of the London, Brighton, and South Coast Railway for the half year ending 31st December states that the expenditure on capital account amounted to £130,391. The gross revenue totalled £1,309,597 as compared with £1,391,212 in the corresponding half of last year. The accounts of the half year, compared with those of the corresponding half of 1892, show a decrease of £81,615 in gross revenue, an increase of £12,353 in working expenses, and a decrease of £9723 in interest on debenture and preferential capital, &c., while on the other hand the dividend on the new ordinary stock amounts to £20,160. The accounts for the half year show:—Balance of revenue over expenditure, £670,957; balance from last half year, including £31,861 reserved on account of dividend on deferred ordinary stock, £74,399; together £745,356; of which the payment of interest on debenture stock, &c., requires £140,991; and on preference capital, £257,978, together £398,969; leaving a balance of £346,387. This enables the directors to recommend the following dividends, namely: £3 15s. per cent. for the half year on the undivided ordinary stock, (making 5⅞ per cent. for the whole year), £110,246, £3 per cent. for the half year on the preferred ordinary stock (making 6 per cent. for the whole year), £76,466; £5 15s. per cent. for the whole year on the deferred ordinary stock, £146,559. Total, £333,271; leaving a balance of £13,116 to be carried forward to next half year.

# LATEST FROM THE MINES.

## CABLEGRAMS AND TELEGRAMS.

**BONNIN DUNDEE.**—The directors have received the following cablegram from Charters Towers:—"Have crushed 219 tons of quartz for 232 ounces of gold. Have completed the new (3) shaft to a depth of 355 feet. The rock drills are working satisfactorily, and we expect to sink at the rate of 35 feet per fortnight. Approximate value of above return, £750."

**Elkhorn.**—Bullion produced in the mill for the week ending January 13, 1894, 8349 ounces.

**Frontino and Bolivia.**—The directors have received advices from the mines for November:—"Produce value, £6262 10s. 5d.; cost, £4591 0s. 10d.; estimated excess of returns, £1671 9s. 7d."

**George Goch.**—The directors have received the following cablegram relative to work done during December:—"1446 ounces of gold off plates during December; 182 ounces gold from concentrates; 4544 tons crushed; 50 stamps working 28 days."

**Geldenhuis Main Reef.**—No crushing took place in December, but 350 ounces is reported from the cyanide plant. It is anticipated that the new mill will be started in February.

**Guadalcazar Quicksilver.**—The quantity of quicksilver drawn off during the four weeks ending January 11th, as cabled from the mines, amounts to 13,200 lbs. A cable dated 7th instant states that "ore is of low quality. There is a great improvement to day."

**Jay Hawk and Lone Pine.**—The directors have received the following telegram from the manager, viz.:—"Estimated returns for last week 9100 ounces. We have cut the lode in the 1400 crosscut south; very rich. Everything is going well."

**Kaboonga.**—In reply to cable asking why the usual fortnightly report of distance driven had not been received in London, the manager at Smeaton telegraphs as follows:—"Drive from the shaft is in 654 feet; delay caused by holidays; indications are favourable for bed rock dip. According to original estimates the distance to be driven to reach the pay dirt was between 700 and 800 feet."

**Main Reef.**—Will recommence crushing 1st day of March next.

**Morgan Gold and Silver.**—Crushed 322 tons for a yield of 221 ounces of gold; value, £773 10s.; wages, royalties, rent, and administration, £266; profit for the month, £507.

**Moodies.**—Returns for December, 1893: Claims rented or leased from company, 266; number of tons crushed by claimholders, 760; yield of gold from ditto, 590 ounces.

**Mosman.**—The directors have received the following cablegram from the manager at Charters Towers:—"After having been thoroughly overhauled and repaired the mill has been started on Wyndham stone. Shall clean up next week. I estimate the value of the stone at grass at £2250."

**New Spes Bona.**—The following cable has come to hand:—"25 stamps have been working since January 5. Shall be working with 50 stamps by January 16. Cyanide doing very well."

**Palmarejo.**—The following return for December last has been received:—"Milled 1400 tons in 23 days, producing $41,500; expenses for month, $33,000."

**Royal Silver Mines of Potosi.**—The secretary has received cable advice that the production for December amounted to 31,820 ounces fine.

**Sheba.**—The directors have received the following telegram from the general manager:—"Level No. 7 at the west end rich in visible free gold."

**Victoria Gold Mining Association.**—The following cablegram, dated 16th January, has been received at the London office:—"234 tons crushed, yielded 450 ounces gold for fortnight."

**Victory (Charters Towers).**—The following cablegram from Sydney has been received:—"Issue scrip certificates against lists Nos. 8 and 9 sent on the 8th and 15th December, making total number of shares on London register 71,175. Do not intend to clean up till 24th instant.'

**Harrietville.**—The following telegram has been received from the mine dated January 18, giving the returns of the last four weeks:—"800 tons—121 ounces."

**Central Montrose Estate and Gold.**—December crushings 500 tons, yielding 322 ounces of gold.

**Joe's Luck and Bon Accord (Sheba).**—During the month the mill ran 18 days, crushed 400 tons, yielded 57 ounces gold, concentrates not treated.

**Zaruma.**—The directors have received the following information by cablegram from the manager at the mines respecting the produce for December:—"Mill working 18 days, crushed 335 tons of quartz estimated to realise £320. Small result is due to poor quartz."

# MINING IN CORNWALL AND DEVON:

## NOTES ON WESTERN MINING, EDITORIAL AND OTHERWISE.

BUSINESS in the share market has been in no sense worthy of the name, and for all practical purposes everybody concerned in dealing might pretty well take holiday. There could hardly be less doing, and prices seem to depend more upon individual needs and action than upon any real considerations of value. Here and there indeed there seems a shade of improvement, but it is only temporary at best, and so far as actual transactions go the tendency is downward.

IF there has been a more unsatisfactory ticketing since tin ticketing was established than Tuesday's, we certainly cannot for the moment recall it. Quantity and price are equally bad—in fact it was bad all round, and after what has been said and discussed it seems almost a fair inference to draw from what might otherwise appear to afford a gleam on the right side — the more definite appearance of Penpoll in the list—that it may simply arise from the fact that prices have fallen to what, with recent ticketings before us, might be almost called a Penpoll limit. It will hardly be said of Tuesday's figures, at any rate, that the Cornish smelters are offering more than is justified. That the quantity ticketed would show a falling off was of course inevitable, when the stoppage and delay caused by the severe weather came into the account; but it certainly was not thought that this would be coupled with so very heavy a drop in prices. How far this is due to the tin market *per se*, or how far to what has evidently been a most unsatisfactory settling-up Christmas for general business, we cannot venture to suggest.

THE improvement reported from South Condurrow is the most cheerful event that has happened since we last wrote; it has come late, but it is none the less welcome for that. Another welcome feature is the improvement in Wheal Agar. How often it has been noticed that a marked improvement in one mine is accompanied by improvements elsewhere. Dividends are of course in a way always satisfactory, but we cannot regard the 4s. dividend in East Pool as very cheerful, nor do the dividend prospects of Dolcoath seem to be all one could hope. However, the secret is being well kept.

THE noteworthy feature in Botallack account is the fact that no less than 107 men are engaged stoping ground on tribute to 45 engaged in opening up—a very good proportion, and one which some other concerns would do well to study and profit by. All that can be done just at present in such mines is to tide over the evil days with as little loss as possible. And in spite of what has been often said against Cornish mine management—and not always without ground—it is a very serious thing to consider that such a mine as Botallack should have to pay its way, as far as it can, out of stull, which only yields 33½ lbs. of tin per ton.

THE statement of accounts at East Pool meeting on Monday, a special report of which appears in another column, is consistent with the depressed tone of the tin market and the condition of mining generally in Cornwall at this critical juncture. There were smaller returns of tin, and a lower average price for ores, but the majority of the shareholders keep their faith in the future of the sett, knowing that when the rise in tin comes the mine will again make substantial profits. The copper and the arsenic found at East Pool form a godsend for the adventurers just now, and Captain Thomas, who much resented once being termed a bit of a pessimist by us, but who as strongly objects to be designated an optimist, did all he could to show the intrinsic value of the different parts of the mine. His speech, as well as that of the Chairman, is worth the reading; and we hope he will live to see East Pool more prosperous than she was even in her most palmy days.

OF course, the adventurers could not let the meeting pass without paying a compliment to Mr. A. F. Basset, the young heir to the Tehidy estates and "lord" of the mine, who comes of age on the 29th inst. There are to be three days festivities on a large scale in connection with the event, and a handsome candelabra, patterned on the design of that presented by the people of Camborne and the neighbourhood to the late Lord de Dunstanville, one of Mr. Basset's ancestors, is to be given to the young squire of Tehidy by his tenantry. East Pool contented itself with passing a resolution congratulating Mr. Basset on his approaching majority, wishing him "a long, happy, and useful life," and expressing the hope "that his relations with his tenantry and all parties interested in this important district may be of the most cordial nature." The New East Pool lease is not yet signed, and the last clause in the resolution is, therefore a most appropriate one. It will serve to remind Mr. Basset of what the adventurers in East Pool perhaps deem it to be one of his duties—the granting of the most generous terms in connection with the new lease. That better terms are needed, no one knows better than ourselves, for East Pool has been strangely handicapped in the struggle for a prosperous existence. A glance at Mr. Henry Rogers' speech, delivered on Monday, will half reveal the truth of our assertion.

DOLCOATH and Wheal Basset meetings are both fixed for Tuesday next. No one knows anything about the Dolcoath dividend, which may be anything from 10s. to 15s. per share, whilst at Basset, where they have made a loss of £1090, a call of 3s. 4d. per share will be demanded. They have stamped 6380 tons of tinstone as against 6961 in the previous quarter, and the average produce of the stuff has been 37¼ lbs., against 36 lbs. in the previous quarter. During last year they sold 432 tons 7 cwts. 2 quarters 9 lbs. of tin, realising £21,285 1s. 3d. The average price was therefore £49 5s. per ton, as against £54 10s. 4¼d. obtained in 1892. Wheal Basset, as we have frequently said, has a distinct future before, and the committee have shown their confidence in the concern (being very large shareholders) by sticking to their holding through good report and ill. The plant which they have laid down for treating the slimes is the best in the county. The plant is now quite complete, nine revolving frames being regularly at work, a great saving of labour being thus effected, while the great loss of tin which went on for years has been stopped. It was feared a few months ago that the water from Wheal Uny would swamp Wheal Basset, but the Basset people are really experiencing no difficulty with the water, their pumps being in most excellent order. They have two or three good lodes in the bottom of the mine, which, on the whole, is looking exceedingly well.

**It is reported from Kimberley that the London and South African Exploration Company, having agreed to forego its claim for rent of the North-Eastern Bultfontein property for two months from 1st December, which is equivalent to the guarantee required by the Court, the sale of the assets of the company is postponed till the 29th inst.**

# JOINT-STOCK COMPANIES.

## NEW REGISTRATIONS.

**THE following are among the joint-stock companies registered at Somerset House since our last notice:—**

**Ægis Investment Company (Limited).**—Registered by Linklater and Co., 2, Bond Court, Walbrook, E.C., with a capital of £100,000 in £1 shares. Object, to enter into and carry into effect an agreement made December, 1893, between the Preference Securities Trust (Limited) of the one part and this company of the other part, and to invest the moneys of the company in stocks, shares, bonds, debentures, or other securities. There shall not be less than two nor more than four directors. The first are H. J. Gardiner, C. Dingwall, W. G. Fossick, and E. Norman. Qualification £500. Remuneration not specified.

**Silati Gold Mining Company (Limited).**—Registered by Renshaw, Kekewich and Smith, 2, Suffolk Lane, E.C., with a capital of £120,000 in £1 shares. Object, to enter into and carry into effect an agreement with the Silati River Gold Mining and Prospecting Company (Limited); to acquire mines, mining rights, &c., in South Africa, and to carry on business as miners and smelters generally. There shall not be less than three nor more than seven directors. The first are C. A. V. Conybeare, M.P., F. R. Bullock, J. M. Douglas, J. C. Swinburne-Hanham, and H. Pasteur. Qualification £200. Remuneration £1000, divisible.

**Bwlchgwyn Road Stone Company (Limited).**—Registered by Kennedy, Hughes and Kennedy, 1, Clements Inn, Strand, W.C., with a capital of £10,000 in £10 shares. Object to adopt an agreement, made January 5, 1894, between R. V. Kyrke, J. O. Bury, and H. C. Johnson of the one part and G. Bevan of the other part, and to acquire and work the Bwlchgwyn Road Stone Quarries, near Wrexham. Table A mainly applies.

# REPORTS FROM THE MINES.

*We find it necessary to announce that, owing to the vast numbers of mining reports, and items of mining intelligence which reach us invariably very late—up to, and frequently after the time of going to press—it is impossible to guarantee the insertion of all of them in the issue in which, in ordinary course they should appear. We always endeavour, however, to make this important feature as complete as possible, and if the secretaries of mining companies, mining captains, and others would kindly make an effort to let their reports, etc., reach us early on Fridays, when it is not possible to let us have them earlier in the week, their doing so would go far to ensure their insertion, and to promote the completeness of our Mining Intelligence.*

## BRITISH MINES.

**Drakewalls.**—J. Hosking, and T. Chapman, January 17: During the week the shaftsmen have completed the cistern bearer, &c., at the 175 fathom level. There have been several lets to the pitwork, a couple of pumps have burst, &c., and the water being quick in consequence of the very heavy rains, the shaftsmen have not been able to work continuously on their proper work, but when not employed they have been engaged driving the 160 fathom level east of the engine shaft, where the lode for the part carried (5 feet wide) is producing some very fine stones of mundic. We are drawing the tinstuff broken and lying at the 175. One stope for mundic is being worked in the back of the 175 west of the engine shaft and two stopes also for mundic in the back of the engine shaft which are producing moderate quality stuff much as for some time past.

**Devon Great Consols.**—Wm. Clemo, January 18: Watson's Engine Shaft: In the 172 fathom level east the lode is producing 1 ton of copper per fathom. In the 160 fathom level east the lode is yielding 4 tons of copper and mundic ores per fathom, very promising. In the 148 fathom level east the lode continues to yield 8 tons of copper and mundic ores per fathom. The stopes are all turning out large quantities of copper and mundic ores.

**Green Hurth.**—January 12: Annies Vein: The vein at south forehead continues poor worth 18 cwts. per fathom. The south stope in the back of the above working maintains its value worth 1¼ tons per fathom. Annies vein north of Robinsons sump since commencing to drive southward the vein has improved for lead worth to-day 2 tons per fathom. East branch at 30 level the vein here is poor. I have stopped this for the present. North west branch above 30 level the north end is poor worth only 8 cwts. per fathom. The south end has considerably improved and is now worth 2 tons per fathom. No ore has been delivered this week, roads block.

**Leadhills.**—T. Newbigging, January 15: Brown's Vein: Jeffrey's shaft now 141 thoms 4 feet below the 145 fathom level is in a vein above 5 feet wide showing a better character of stone mixed with spar, but still without ore. Wilson's shaft now 16 fathoms 1 foot 6 inches below the 145 fathom level is in a vein above 5 feet wide, composed of kindly stone and spar but no ore. The stope above the 130 north of Jeffrey's shaft is worth 30 cwts. of ore per fathom. The 115 fathom level north of Jeffrey's shaft keeps in a vein above 4 feet wide well mixed with spar but only showing spots of ore not to value. Nos. 1 and 3 stopes above this level north of Jeffrey's shaft are worth 30 and 70 cwts. of ore per fathom respectively. Cleaning out No. 2 stope. The rise above same level north of Jeffery's shaft is worth 30 cwts. of ore per fathom. The 100 fathom level south of Wilson's shaft is in a vein 44 feet wide showing kindly stone and spar with ore worth 10 cwts. per fathom. The 85 fathom level south of Wilson's shaft continues in a very encouraging vein above 4 feet wide nicely mixed with spar and ore worth 200 cwts. per fathom. Making good progress rooming out preparatory to sinking winze from 85 to 100 level. Cleaning out stope above the 7 south of Wilson's shaft. The stope below the 5 north of main rise is worth 25 cwts. of ore per fathom. The stope below the 35 south of flat rod shaft is worth 90 cwts. ore per fathom. The stope above the 35 south of flat rod shaft is worth 25 cwts. of ore per fathom.—Sarrowcole Vein: Gripp's adit north of George's Roust vein is in a vein above 4 feet wide showing a good rib of spar spotted with ore but not to value. Gripps adit south of Georg's Roust vein is in a vein 3½ feet wide, composed of nice looking spar and soil, but without ore.

**New Minera.**—Mining report for the two weeks ending January 12:—275 yard level stope east of No. 2 rise on south lode 5 feet wide worth 2½ tons blende per fathom. Stope west of No. 2 winze on north part of lode; lode 6 feet wide worth 3 tons blende per fathom. Stope in bottom of level east of No. 2 winze lode 5 feet wide worth 3 tons blende per fathom. 295 yard level driving west on north lode worth 2½ tons blende and a little lead ore per fathom. Stope on north lode, lode 7 feet wide worth 3 tons blende per fathom. Stope west of winze on north lode, lode 5 feet wide worth 3 tons blende per fathom. 315 yard level driving east of main crosscut cut into a nice looking lode showing some lead ore and letting out a small feeder of water. Driving crosscut north of incline shaft stopped for a short time, level full of stuff. A rise has been commenced in the crosscut north of the incline shaft on a lode worth about 2 tons lead ore and blende mixed per fathom. 335 yard level driving east of incline shaft, some blende has been discovered on the north of the level; this looks well and will be followed, worth about 1½ tons per fathom. Stope east of incline shaft lode 4 feet wide worth 2½ tons blende per fathom. There are 12 men working on tribute in various parts of the mine. Dressing, 29 tons blende have been sent off since last report, making the total quantity sold 3726 tons blende and 1764 tons lead ore.

**Prince of Wales.**—S. Roberts J. rowse, January 17: We are very pleased to say the condition and general appearance of the mine is good. In the cross cut north at the 193 fathom level the ground though hard and spare for driving is in every particular favourable for the productiveness of the lode and the indications are all pointing to its existence in advance of the end. In the 180 west the lode is 5 feet wide of a well defined, strong and masterly character yielding good tinstuff. The lode in the 155 east is 6 feet wide on tinny capel and spar of good quality. The lode in the stopes throughout the mine maintains its size, character and value.

**Polberro.**—Charles Thomas, John Harper, January 15: The lode in the 26 east of Pink lode is of about same size and value as last reported and continues to yield 14 lbs. of tin to the ton. The lode in the 26 end west is rather larger and continues to be quite as productive. This end is now worth £16 per fathom. The 20 west on the junction of the Pink and Callow lodes is driven about 2 fathoms. The ground is softer and the character of the lode has improved since the level was commenced. The lode yields good stones of copper ore with a little tin. We are still making fair progress in driving the 26 cross cut north.

**Weardale.**—Report on Weardale Company's mines for week ending January 13; Groverake: Slate Sill drift east sparry vein poor in ore and slow to drive, worth 8 cwts. per fathom. Firestone drift east vein looks better, worth 12 cwts. per fathom. Adamson's drift west unchanged, worth 14 cwts. per fathom. Rise from Rowell's old ground to 30 fathom level strong, coarse, sparry vein poor in ore and slow to drive, worth 8 cwts. per fathom. 80 fathom level east strong sparry vein more kindly but extremely poor in ore.—Boltsburn: Driving east from Rowell's ground opening out south flatts forehead more mixed with spar but poor in ore. Cross cutting to north flat west from Consdale a mixture of limestone and vein strings slow to work. Stopes above Watt's level in vein worth 8 cwts. per fathom, in north flatt worth 16 cwts. per fathom, in south flatts worth 4, 24, 32, 38, 28, 36, 14 and 12 cwts per fathom. Rising and opening out south flatt west from Baty's ground the ground looks better and there is a little improvement in ore, worth 8 cwts. per fathom. Siddling: The 58 fathom level is now opened 88 fathoms east from drawing shaft. The level is crushed full. Cross cutting north from bottom of shaft in scar limestone we have driven 35-6 fathoms. Vein not cut yet, a little more quartz in the end. The 64 level west has been driven 1 fathom this week, vein straight but slightly improved. The 64 level east has been driven 1 fathom this week, vein 3 feet wide chiefly fluor spar mixed with ore. End worth 18 cwts. per fathom. Stopes in 64 level east and west worth 16, 12, 14, 20, and 16 cwts. per fathom. South vein Stobb's drift stopes worth 12, 17, and 14 cwts per fathom. Ore raised for week 77 tons, ore dressed for week 34 tons, ore and fume smelted for week 61 tons, producing 36 tons of pig lead. Dressing delayed by frost and breakage at Greenlaw's mill.

## COLONIAL, INDIAN, AND FOREIGN MINES.

**Brilliant Block.**—Mine manager's report for fortnight ending November 29: Have let a contract to sink the underlie shaft an additional 140 feet sunk 1 foot up to present date. Total depth below No. 4 plat 80 feet. The reef in the sink is 8 feet thick in east side and 4 feet in west side of the shaft of fair quality. No 4 level west extended 4 feet, total length 283 feet. The reef in face is 3 feet thick medium quality. No. 4 level east extended 7 feet by contract, total length 275 feet which completes contract. There is about 1 foot of stone on the footwall and 2 feet against the hanging wall of fair quality. I think this is the hanging wall reef we are working on at No. 3 level east. In the footwall stopes over No. 4 level east the reef is 2 feet 6 inches thick of fair looking stone. No. 1 winze from No. 3 level east deepened a further 7 feet by contract, total depth 92 feet, and holed to No. 4 level. This completes contract. Stopes over this level reef varies from 1 to 4 feet thick of medium quality. No. 2 winze No. 3 level west deepened 18 feet by contract, total depth 92 feet. Last week the men working in a winze on western side of the Brilliant P.C. shaft holed through in end of our No. 1 level east. This proves beyond doubt that we are working on the main Brilliant reef.—Stone Hauled: Started hauling with skips on 17th inst., and have hauled 770 skips of quartz to date. 500 tanks of water have been hauled during the fortnight, equal to 150,000 gallons.—Stone crushed: 185 tons at Bonnie Dundee mill for a rough clean up of 87 ounces 6 dwts, 12 grains gold.

**Bonnie Dundee Mines.**—Mine manager's report for fortnight ending December 2: Have had four men stoping east of winze from No. 7 south west level, reef averages 15 inches of good looking mineral stone. Six men have been stoping from back of crosscut from No. 9 south west level. There is about a foot of fair looking stone, formation still hard. No. 3 vertical shaft has been sunk a further depth of 16 feet, total depth from surface 312 feet. Stone raised during the fortnight 60 tons, making a total of 80 tons in the hoppper. (Crushing reported 15th January 219 tons for 232 ounces of gold.) We shall start the rock drills as soon as we timber up. The store room will be finished in a week, and this will complete all the surface buildings. The new machinery is working well.

**Chiapas.**—Mine report fortnight ending December 15; Providencia main advanced 8 feet 2 inches, making a total of 360 feet 10 inches; no change. Providencia No. 2 crosscut east advanced 4 feet 11 inches, making a total of 48 feet 10 inches. Poor, showing no spots. Old Providencia extracted 158 tons of ore. Santa Fé Hill extracted 30 tons of ore. Santa Fé stope extracted 51 tons of ore. Pay streak of mineral ground 8 feet across. Santa Fé drive west (opposite Santa Fé winze Taylor main level) advanced 13 feet 2 inches. Cut through dyke into hungry ground. Taylor No 3 stope extracted 273 tons of ore. Taylor No. 2 stope extracted 22 tons of ore already broken. Santa Fé winze pumping, cutting drains and puddling around winze. Copper Creek drift stopped for the present. Taylor main north branch and Taylor main extracted 91 tons of ore. Cutting corner out for winze, cut scattered pockets of ore in same. Taylor main drift west advanced 39 feet 4 inches, making a total of 45 feet 11 inches; extracted 74 tons of ore. Tons to mill 869.

**Don Pedro.**—Maquine Mine half monthly report, December 15: Mineral extracted has been derived from the same sources as usual—viz., No. 8 and No. 6 shoots. The quality has been of low grade owing to a change which has taken place throughout the stopes, which we trust is only temporary.—No. 8 shoot No. 2 stope: Nothing of any consequence has been done here since our last owing to the formation being so hard and the force very limited to carry on operations and to open up other ground, therefore this has been suspended and the force put in No. 1 stope, where the lode is of very good quality, although very wet, therefore great care has to be taken in excavating same. In the northern section of this shoot of lode we have started a drivage to prove the lode further north, and up to date 12 feet has been driven through lode of low quality. No. 8 stope north of the No. 7 has been also wrought on, the lode being very large but poor. Stopes in back of the 50 C stope which carries the line of gold has been carried on, but owing to the ground becoming very wet progress is rather slow. The line still continues going east but small. For this part of the month three boxes have been extracted of low quality boxwork. West of the above stope we have commenced stoping operations on the south side. The lode is of a fair size and of moderate quality, 60 fathom cross cut from the north drivage we have commenced to drive east to enable us to drain the water from the No. 7 stope.—Running Work: On the 5th the working barrel of the bottom lift got worn through, therefore a new one had to be placed. To complete this work the engine was idle three hours.—50 Horizon: In consequence of the timbers again beginning to settle down in the old crush a force has been put to repair the same by rising the back laths and fixing sets.—Incline Shaft: The repairing of this has been continued as usual also a portion of the old adit been kept under repairs.

**Morgan Gold and Silver (Wales).**—Mr. A. W. Castle reports: During the month just ended our prospecting operations have been continued with marked success. We have principally directed our attention to tracing the run of the old rich shoot above and below No. 2 level and have succeeded in striking it at both points. We are carrying the western branch in the stope west of the shaft. We are also taking out strong visible gold from a rise above No. 2 and have struck the eastern run of the shoot after sinking 11 feet below the level. The stone at the bottom of the sink is beautifully mineralised and carries strong visible gold. As far as I am able to judge at present the richest part of the shoot has a distinct trend eastwards, and follows the inclination of the fault. The bulk of the exploration during recent years has been westward and the ground in which we are now sinking and driving has been comparatively unprospected. We are carrying before us in virgin ground a fine body of fairly high grade ore and take out almost every day good specimen rock carrying a high percentage of visible gold. During the month we have mined and milled 322 tons of ore which has given us a yield of 221 ounces of gold an average of 13 dwts 17 grains per ton. The expenses for the month including wages, rent, royalty, and all charges amount to £266 and taking the value of the gold at £3 17s. per ounce the price usually realised by us, the result of the four weeks' operations show a profit of £307.

**New Heriot.**—The secretary sends us the following details from the manager's report for November: Main incline shaft sunk 14 feet 5 inches, winzes 76 feet, drives on reefs 286 feet, stope drives 31 feet, cross cutting 43 feet, total 450 feet 3 inches. Ore mined from main reef 2893 tons, from No. 1 south 170 tons, from No. 2 south 1649 tons, total 4717 tons. Forty stamps ran 28 days 13 hours, crushing 3942 tons, yielding 2437 ounces 3 dwts. smelted gold. At the cyanide works 2189 tons of tailings were treated, and 943 ounces 8 dwts. of gold obtained. Direct treatment is still being carried on. The profit for the month was £4400.

**Pestarena.**—W. Henwood Trelease, T. Henry Mesa: Mid-monthly report: Ends: The lode in the 55 end east on No. 1 lode seems to be improving being now 80 centimetres wide from the bottom to about half the height of the end and carrying a fair quantity of pyrites. As the ore is rising towards the roof its production is expected to reach about 8 tons of 1 ounce 5 dwts. per fathom before the end of the present month. In the 70 end east the lode is somewhat disturbed and fallen off in value. The disturbance is probably due to the quartz lode reported last month and is hoped to be only temporary. Its value is now estimated at 6 tons of 1 ounce 10 dwts. per fathom. The 70 end west has again improved and is now worth 8 tons of 2 ounces ore per fathom. A branch of pyrites has been met with in the 70 west on A and B lode and the end presents a most promising appearance. Its value is estimated at 2 tons of 1 ounce 10 dwts. per fathom.—Cross cuts: A small branch 15 centimetres wide has been passed through by the 70 cross cut north, but does not carry any pyrites. There has been no decrease in the quantity of water coming from this point. Nothing of importance has been met with in either of the 90 cross cuts, and the 130 has been suspended the level being under water.—Stopes: The production of these remains about the same as was reported on the 3rd inst.—Stabioli Mine: Ends are still being driven north at the Anza and 18 metre levels but no ore has yet been met with or any change worthy of notice.—Machinery: The breakage to the pumping machine has been repaired and the pumps started on the 12th inst. The water is now 4 metres over the 130 fathom level. All the other machinery has been kept in the normal state of repair, but difficulty is being experienced, excepting the Pozzone mills, from the scarcity of water.—Transport: The transport of mill beds and runners will be completed to-morrow, and satisfactory progress is being made with the timber, the season having been so far, for the purpose, exceptionally favourable.

**Transvaal Gold Exploration and Land.**—The following particulars are from general manager's advices, dated December 20: Ore extracted at all places 232 tons, of which 115 tons from Theta assayed 4 ounces 19 dwts per ton.—Theta Mine: Total drivage for week 94 feet, 44 feet being in ore averaging 37 inches thick.—Beta Mine: Drivage 32 feet on ore averaging 9 inches thick.—Nu Mine: Drive from face was in 124 feet and the deposit continued of good quality and 2 feet thick.—Prospecting: At Brown's Hill the mid drive had passed the limestone and the deposit was in the regular formation and 9 inches thick. Work was proceeding at Kameels Creek.

**Victoria and Queen.**—Mining manager's report for fortnight ending November 29: Since last report I had to stop the men from stoping, and we are now engaged opening out the underlie, which I expect will be ready for the opening out sets by the latter part of next week. I have had the carpenter engaged in fixing the brace, and we are now able to haul with two ropes. The carpenter's are now engaged in putting up a blacksmith's shop. The reef in the stopes is looking about the same as last reported on. We have hauled 20 tons of quartz for the fortnight and crushed 32 tons 18 cwts. for 342 ounces 3 grains.

**Zaruma.**—Mine report for November: A small increase in the output of mineral, a so in the force, will be noticed. At the points mined during the month the lode has not been of average width, and often disordered by intrusions of barren rock, except at No. 3 winze, where its size and compact character has been maintained; but to the great inconvenience of hoisting the ores 40 feet by hand labour, also water at the time, this point was suspended early in the month. The bottom is now dry, but it is not likely that much sinking can be done as water still issues from the roof of No. 3 level. The pumping and hoisting machinery continues to work satisfactorily. The mine water at present is very limited in quantity. Developments: No. 3 level south has been driven 33 feet total 105 feet from sump winze. The drivage on the west side has passed through a lode of mixed character and varies from 3 feet 6 inches to 2 feet wide, composed of hard white and bluish quartz with occasional lines of country rock with a view of advancing towards No. 3 winze as fast as practicable, all the width of the lode has not been carried. From the east side water issues freely, and when convenient this will be cut into to ascertain the full width of the vein. Back of No. 3 level a little stoping was carried on here in the first part of the month on the west branch, when it became split up and decreased in width, and was therefore suspended. On the east branch a little drifting has been done northward, where the mineral is cleaner and from 2 to 3 feet wide. From the face a quantity of water is issuing through small crevices.—No. 10 Stope: A little stoping was done in the middle part of the month at the north end of No 2 winze and along under No. 2 level. Later we put a hole through to No. 2 level for filling the excavation — Intermediate level has been driven 26 feet, total from No. 2 winze 40 feet, in a lode about 3 feet wide composed of white porous quartz with crevices. No. 3 winze has been sunk 2 feet, total below No. 2 level 40 feet "as last reported the miners were engaged cutting into the east side" where the hanging wall has been met with. The lode here is fully 10 feet wide and of the same appearance as last reported. This was suspended in the first part of the month on account of meeting water and getting out of hand to hoist mineral by manual labour. No. 4 winze has been commenced about 12 feet north from Durham's shaft below No. 2 level and has been sunk 8 feet on the east side of the lode, in the first part of sinkage this was composed of yellow and white quartz with small lines of brown ore, but latterly hard white quartz has come in which washes a moderate show of gold in the pan. On account of having met with water a hand pump has been fixed and is coping with the water easily. No. 9 stope, a piece of lode has been taken down from the east side at the south end of the stope, also a rise put up to No. 1 level for filling the excavation. Filling stopes, a large quantity of debris has been deposited in Nos. 9 and 10 stopes. The two masons have been engaged at the second launder on the watercourse building a dry stone wall, and at the reduction department on general work. Output of mineral amounted to 511 tons sent to the mill.

**Australian Broken Hill Consols.**—The mining manager reports by mail for the fortnight ended December 7: Block 96: Main shaft 280 feet level east, prospecting drive driven 11 feet 6 inches, total 116 feet. A little carbonate of iron carrying galena is now showing in the lode. Incline sunk 7 feet, total 512 feet 6 inches. The lode is now dipping very fast and is becoming more compact. A little native silver and fahlerz has been met with, and the outlook is promising. No. 4 level east of incline driven 8 feet 6 inches, total 107 feet 6 inches; no change. No. 3 level east of incline, stoping off winze No. 1 driven 15 feet, has yielded some galena and a little fahlerz. No. 3 level west of incline stoping off winze No. 1 driven 15 feet, has yielded a little galena. 280 feet level west prospecting drive driven 16 feet, total 54 feet. Lode has increased in width but no ore yet showing.—Note: The quantity of rock mined during the fortnight was 2738 cubic feet.

**Balaghat Mysore.**—Captain Joseph Pryor, December 27: Ogle's shaft has been sunk 3 feet 6 inches or 56 feet 6 inches below the 730 feet level. The lode is of a promising appearance but as yet the stuff only yields a trace of gold. The No. 1 winze in the bottom of the 730 feet level north has been sunk 4 feet 6 inches or 32 feet 6 inches below the level. The quartz is from 1 foot 3 inches to 1 foot 6 inches wide and assays 2 ounces 2 dwts. of gold per ton. The stopes in the bottom of this level yield quartz of 14 inches wide and assay on an average 1 ounce 11 dwts. 18 grains per ton. The stopes in the back of this level produce quartz of about 14 inches wide and assay on an average 1 ounce 12 dwts. 11 grains per ton. The stopes in the bottom and back of the 680 feet level north produce quartz of 1 foot wide and assay on an average 1 ounce 7 dwts. 23 grains per ton. The driving of the 410 feet level south has for the time being been suspended. The end is now 315 feet 6 inches from the shaft. It produces a little quartz but of a very low quality. The cross cut west at the 410 feet level has been advanced 14 feet 3 inches, or 19 feet 3 inches from the level. The No. 1 winze in the bottom of 270 feet level south is now down about 57 feet below the level. The lode is of a promising character but as yet does not yield any quartz. The further sinking of this winze has been suspended for the present. The stopes in the back of the 165 feet level north produce quartz of from 1 foot to 2 feet wide but assay on an average only 7 dwts. 14 grains and have therefore been suspended. — Haines' Shaft: During the past fortnight we have been obliged to take down some very heavy and dangerous ground from the hanging wall of the shaft below the 330 feet level, and consequently the sinking has been retarded. I am however glad to say not only is the shaft now thoroughly secured, but we have again resumed its sinking; it is now down 27 feet below the level. The lode yields quartz of about 1 foot wide and assays 8 dwts. 9 grains per ton. The driving of the 300 feet level north has been suspended for the present, but the south level has been advanced 18 feet, or 66 feet from the shaft. The quartz is 15 inches wide and assays 8 dwts. 9 grains per ton. A stope in the back of this level produces quartz of about 18 inches wide, and assays 13 dwts. 1 grain per ton. The No. 1 winze in the bottom of the 730 feet level south has been sunk 4 feet 6 inches, or 68 feet 6 inches below the level. The quartz is 2 feet wide and assays 1 ounce 8 dwts. per ton. We have just started driving north from the bottom of this winze so as to hasten the communication with the 300 feet level south when we hope to lay open a good section of stoping ground. The No. 2 or midway winze also in the bottom of this level has been sunk 7 feet 6 inches, or 11 feet 6 inches below the level. The quartz is 6 inches wide and assays 3 ounces 0 dwts. 16 grains per ton. The stopes in the bottom and back of this level produce quartz of 1 foot wide and assay on an average 7 dwts. per ton. The 730 feet level north is now 228 feet 6 inches from the shaft. The lode yields quartz of 2 feet wide and of an assay value of 7 dwts. 14 grains per ton, but for present we have suspended its driving. We have also suspended the further sinking of the No. 1 winze for the present, as well as the stopes in the back of this level. There is, therefore, no particular change in these places to refer to. Tennant's shaft on the New or Champion lode has been sunk 5 feet or 12 feet 6 inches below the 285 feet level. The lode is improving in size and appearance, the quartz being now nearly 2 feet wide and assaying 5 dwts. 14 grains per ton. In addition to the above sinking we have also been engaged cutting ground for cistern plat and taking down the hanging wall for shaft roll. This work we hope soon to get completed when the sinking will proceed with greater progress. The 285 feet level north has been driven 8 feet or 26 feet 6 inches from the shaft. The quartz is fully 2 feet 6 inches but at present only assays 4 dwts. 16 grains per ton. The 285 feet level south has been advanced 6 feet 6 inches or 25 feet 6 inches from the shaft. The quartz has again become smaller being now only from 9 inches to 1 foot wide and assays only 3 dwts. 17 grains per ton. —Surface: The general work at surface is progressing satisfactorily.

**Harrietville.**—Fortnightly report of Mr. T. G. Davey, superintendent, dated December 8: Mons Meg Mine: Winze on main shoot below tunnel D sunk 9 feet, total 72 feet. The lode at bottom is evidently under the influence of a similar fault to that met with at the 44 feet below tunnel J, the foot or western wall having assumed a sharp westerly dip and carrying with it a massive body of white quartz in which there are colours of gold only. This must be left for the present, and sinking will be continued on the hanging wall, which maintains its easterly dip, until a further dip of 30 feet has been attained, when drives will be extended north and south on course of lode. There is every reason to hope that good gold will be met with below the fault, as was the case under the 44 feet level referred to. Rise at back of 44 feet level below J on north shoot advanced 6 feet. Lode 2 feet wide and somewhat auriferous, but not payable.—Stopes: Lode in north stopes over drive south of D from 8 feet to 10 feet wide, assaying from 5 dwts. to 10 dwts. per ton. A vein recently discovered in footwall assays as much as 1 ounce per ton. Stopes at back of 290 feet level below J lode from 3 feet to 5 feet wide assaying 5 dwts. per ton. Lode in north stope over 240 feet level 3 feet wide assaying 6 dwts. per ton. South stope over 165 feet level lode 1 foot wide assaying 5 dwts. per ton.—Guerdon Mine: Rise on Guerdon lode north of tunnel K advanced 9 feet, total 107 feet. Lode 4 feet wide assaying 3 dwts.—Swindle Lode: Shallow tunnel towards Swindle lode extended 8 feet, total 165 feet. Quartz veins with occasional colours of gold.—Tiddledee Mine: Stope on new shoot at back of tunnel B lode 2 feet wide assaying 5 dwts. per ton. Jackass Mine vein in old stopes at B 16 inches wide assaying 4 dwts per ton.—Surface: Tunnel under Jackass road advanced 16 feet, total 97 feet. Intersected large and well defined quartz lode carrying colours of gold.

**Mysore Reefs.**—Fortnightly report of Captain M. Scantlebury, mine agent, dated December 27: Underlie Shaft: This shaft has been sunk 10 feet, now 159 feet from surface. The lode is opening out again and clearing itself from the influence of the crossing. We have now 1 foot of quartz on the foot-wall, and quartz making also against the hanging wall. The assay value of two samples of the quartz on the footwall is 3 dwts, 6 grains and 6 dwts. 12 grains of gold to the ton. Vertical shaft has been sunk 11 feet, now 148 feet 6 inches from surface. There is no change in the rock which is very hard. We have started a trial shaft west of a large old working about 600 feet west of the reef the two shafts are on. We must have a supply of drinking water for the workmen and this shaft will to a certain extent prove this ancient working.

**Mysore Gold.**—R. Hancock, December 27: Mining operations for the fortnight ending December 25: Owing to the Christmas holidays the measurements were taken on the 22nd December. Rowse's shaft has been sunk 8 feet 6 inches, making a total depth of 93 feet below the 1360 feet level. The 1360 feet level north of crosscut has been driven 12 feet 9 inches, making a total distance driven of 45 feet 6 inches. The lode is 1 foot 6 inches wide assaying 4 dwts. The 1360 feet level north south of crosscut has been driven 17 feet, making a total distance driven of 58 feet 9 inches. The lode is 1 foot 6 inches wide assaying 5 dwts. 21 grains. The 1260 feet level north has been driven 35 feet 6 inches, making a total distance driven of 593 feet. The lode is 6 feet wide assaying 16 dwts. 8 grains. The winze in the bottom of this level has been sunk 10 feet 6 inches, making a total depth of 29 feet 6 inches. The lode is 4 feet 6 inches wide assaying 2 ounces. We have a machine engaged cutting out a piece of ground in the back of this level for fixing a winding engine, &c. The 1260 feet level south crosscut west has been driven 1 foot 6 inches, making a total distance driven of 5 feet 6 inches. The rise in the back of this level has been put up 13 feet 6 inches, making a total height of 217 feet 6 inches. The lode is 2 feet wide assaying 2 ounces 3 dwts. 6 grains. There are two stopes in the back of this level, the average width of the lode being 5 feet, giving an average assay of 2 ounces 12 dwts. 11 grains. The rise in the back of the 1150 feet level north has been put up 10 feet, making a total height of 81 feet. The lode is 1 foot wide assaying 6 dwts. 12 grains. There are three stopes in the back of this level, the average width of the lode being 3 feet 6 inches, giving an average assay of 1 ounce 7 dwts. 14 grains. The 1160 feet level south has been driven 11 feet 6 inches, making a total distance driven of 50 feet. There are six stopes in the 1060 feet level north, the average width of the lode being 1 foot 5 inches, giving an average assay of 1 ounce 13 dwts. 12 grains We have also a pare of men engaged stripping down side in the bottom of this level, in which the lode is 2 feet 6 inches wide. No assay made. We have two pares of men stripping down sides in the 990 feet level north in the back of this level, in which the lode averages 1 foot wide assaying 6 dwts. 12 grains. There are two stopes in the back of the 890 feet level north, the average width of the lode being 2 feet 3 inches, giving an average assay of 11 dwts. 17 grains. We have also a pare of men engaged stripping down side in the back of this level, in which the lode is 1 foot wide assaying 1 ounce 0 dwts 21 grains. The lode in the stope in the back of the 780 feet level is 3 feet wide assaying 10 dwts. 6 grains. The 620 level north of crosscut has been driven 18 feet 6 inches, making a total distance driven of 138 feet. The lode is 3 feet wide assaying 14 dwts. 6 grains. The 620 feet level south of crosscut has been driven by hand labour 1 foot 6 inches making a total distance driven of 53 feet 6 inches. The lode is 9 inches wide assaying 18 dwts. 6 grains. The rise in the back of this level has been put up 10 feet making a total height of 38 feet. The lode is 4 feet wide assaying 18 dwts. 6 grains. The lode in the stope in the back of this level is 2 feet wide assaying 8 dwts. 11 grains. The lode in the stope in the back of the 510 feet level south is 2 feet wide assaying 3 dwts. 6 grains. The end in the 400 feet level north of cross cut has been driven 7 feet, making a total distance driven of 136 feet. The lode having pinched out we have suspended the driving of this end and put the machine to rise in the back of the level 29 feet north of the cross cut, which has been put up 4 feet on a lode 3 feet wide assaying 2 dwts 14 grains.—Taylor's Shaft: There are two stopes in the 400 feet level north, the average width of the lode being 2 feet giving an average assay of 8 dwts. 19 grains.—Gilbert's Shaft: The 650 feet level north end has been driven 20 feet, making a total distance driven of 119 feet. The lode is 2 feet wide assaying 5 dwts. 5 grains. There are two stopes in the 520 feet level north the average width of the lode being 3 feet, giving an average assay of 7 dwts. 12 grains. The end in the 520 feet level south on the north part of the lode has been driven 19 feet 5 inches, making a total distance driven 34 feet 6 inches. The lode is 2 feet wide assaying 1 ounce 18 dwts. 6 grains. The lode in the stope in the back of the 430 feet level north is 2 feet wide assaying 2 ounces 19 dwts. 6 grains. There are two stopes in the 360 feet level north, the average width of the lode being 2 feet, giving an average assay of 13 dwts. 3 grains. There are two stopes in the 290 feet level north the average width of the lode being 1 foot 7 inches giving an average assay of 14 dwts. 16 grains. There are two stopes in the 290 feet level south, the average width of the lode being 3 feet 6 inches, giving an average assay of 3 dwts. 22 grains. Tennant's shaft has been sunk 5 feet making a total depth of 9 feet 3 inches below the 820 feet level. The lode is 1 foot 2 inches wide assaying 11 dwts. 17 grains. The 820 feet level north has been driven 24 feet, making a total distance driven of 164 feet 6 inches. The lode is 3 feet wide assaying 7 dwts 19 grains. The lode in the stope in the back of this level is 6 feet 6 inches wide assaying 1 ounce 3 dwts. 12 grains. The lode in the stope in the back of the 360 feet level north, south of cross cut, is 2 feet wide assaying 19 dwts. 14 grains. The end in the 290 feet level south, north of cross cut, has been driven 3 feet, making a total distance driven of 41 feet 6 inches. The lode is 8 inches wide of a mixed character. There are two stopes in the back of the 290 feet level south, north of cross cut, the average width of the lode being 1 foot 4 inches, giving an average assay of 6 dwts. 12 grains.—Schaw's Shaft: The 450 feet level north has been driven 1 foot 9 inches making a total distance driven of 1447 feet 9 inches. There is nothing here to report. No. 2 rise in back of this level has been put up 7 feet, making a total height of 155 feet. The lode is 6 inches wide, assaying 5 dwts. 5 grains. The winze in the bottom of this level has been sunk 2 feet 6 inches, making a total depth of 48 feet 6 inches. The lode is small and poor. The lode in the stope in the back of this is 1 foot 6 inches wide assaying 8 dwts. The 450 feet level south of crosscut has been driven 12 feet 9 inches, making a total distance driven of 261 feet 3 inches. The lode is 4 feet wide assaying 10 dwts. 10 grains. The lode in the stope in the back of this level is 3 feet 6 inches wide assaying 1 ounce 0 dwts. 21 grains. The winze in the bottom of the 320 feet level north has been sunk 3 feet 0 inches, making a total depth of 123 feet 6 inches. The lode is 1 foot 6 inches wide assaying 6 dwts. 12 grains. We have started to drive from the top of the rise in the back of the 320 feet level north of crosscut on the fold, and have driven 12 feet 6 inches. The lode is 2 feet wide assaying 10 dwts. 10 grains. The lode in the stope in the back of this level is 1 foot 3 inches wide assaying 7 dwts. 3 grains. The 320 feet level south of crosscut has been driven 3 feet, making a total distance driven of 135 feet. There is nothing here to report. The 220 feet level north has been driven 3 feet 6 inches making a total distance driven of 217 feet.—McTaggart's shaft: The 320 feet level north has been driven 14 feet, making a total distance driven of 54 feet 6 inches. The lode is 9 inches wide assaying 5 dwts. 5 grains.—Glen shaft: The 250 feet level north has been driven 14 feet 6 inches, making a total distance driven of 1191 feet 3 inches. The lode is 1 foot 6 inches wide assaying 3 dwts. 22 grains. The crosscut east in this level has been driven 2 feet 6 inches, making a total distance driven of 214 feet 4 inches. Ribblesdale's shaft has been sunk 6 feet, making a total depth of 166 feet. The 1030 crosscut west has been driven 20 feet, making a total distance driven of 238 feet. The Eastern Prospect shaft has been sunk 2 feet 6 inches, making a total depth of 71 feet. The sinking during the past fortnight has been very much hindered by water, and the putting in of timber. The health of the camp is very satisfactory.

**Mount Zeehan (Tas.).**—The manager reports for week anded December 5: Argent section main engine shaft, No. 6 lode 72 feet level north: Stope in back of level continued. Ore raised, 61 tons 15 cwts. good seconds and 2 tons 5 cwts. firsts. Lode averages from 4 feet to 6 feet wide and is carrying good milling ore with a little firsts. No. 4 lode 72 feet level north: Stope in back of level continued. Ore raised 65 tons 13 cwts. good quality seconds. Lode is from 2 feet to 3 feet wide carrying good seconds. South air shaft: The 37 feet level south has been extended 6 feet 6 inches, total 43 feet 6 inches. Ore raised 5 tons 14 cwts. fair quality seconds. Lode carries good ore but has narrowed to a few inches; we however expect it to widen out again. Concentrator has been kept running five days of eight hours each and has milled 132 tons of seconds for 24 tons 3 cwts. concentrates, containing about 17 tons 19 cwts. lead and 1894 ounces of silver. Machinery: During the Christmas holidays we shall make a thorough overhaul of boilers and very likely cease milling for a few days.

**Nine Reefs.**—Fortnightly report of Captain John Woolcock, mine agent, dated December 27: Vyvyan's shaft: The 350 feet level south of shaft has been driven 9 feet 3 inches, total from shaft 41 feet 8 inches. The lode matter continues without change to notice which is of a disordered character and not sufficient value to report, being composed principally of schist and a little carbonate of lime, but at present there is no quartz of importance. If we do not get into a more productive part in a little further driving I shall think it advisable to crosscut east and west to prove if there is a better lode on either side of us We have had one machine sinking shaft and taking out the ground for cistern, plat, &c., which has been deepened 2 feet 1 inch, total depth below the 380 level 3 feet 9 inches. This is a long piece of ground to remove, and on Saturday I took the machine from the south end in order to expedite the work and get everything ready for fixing standing lift at the 380 and commence sinking below as soon as possible, so the driving of the end will be suspended for a short time. The 300 feet level south has been advanced 14 feet 4 inches, total distance from shaft 172 feet 6 inches. The quartz leader is from 6 inches to 8 inches wide, and the yield of gold is about the same as last reported. A sample broken from the end yesterday gave by assay 15 dwts. 6 grains of gold per ton. The 220 feet level south has been driven 15 feet 1 inch, total distance from shaft 370 feet 11 inches. No improvement has taken place in this end since my report of the 13th inst. The lode matter is wide composed of schist, carbonate of lime, and a little pyrites, but of no commercial value. The cross cut east at this level has been driven 7 feet 1 inch, total distance from level 34 feet 11 inches. The branches of quartz reported in my last must have been the east lode, as we have met with nothing since, and the end at present is in a dense, clean country rock and the driving is suspended. These men will be put to sink a winze in the bottom of the 300 at 100 feet to the south of shaft. This will prove the ground between the two levels, and also when communicated will ventilate the bottom of the mine.—Bennett's Shaft: The crosscut west at the 145 feet level has been further advanced 11 feet 1 inch, total distance from level 104 feet 7 inches. We met with a small vein of quartz on Saturday about 2 inches wide, but I regret to say it was not gold bearing. There is still a little water issuing from the bottom of the end, and the ground is of a favourable nature.—Surface: South Shaft: We have made good progress in the sinking of this shaft which has been sunk 41 feet 8 inches from surface. The ground which is of a friable decomposed schist has been most favourable for sinking, and I am hoping that it will last for another 20 feet, when we shall put in bearers and timber the shaft to surface. We are taking out the ground for the loadings for our small air compressor and winding engine, &c., which we have on the mine, and I hope to be ready for the masons in a day or two. As there is every probability of this shaft being sunk to a good depth I thought it advisable to commence the above work at once seeing we could not do much by means of windlass when we get deep, or by hand labour when we get into hard ground. Our machinery and pitwork are all in good order and working well.—Health: I am pleased to say the general health of the camp is very good.

**New Guston.**—The following cable information has been received from the mine:—Output for December month: Ore shipped 590 tons, estimated value £12,680, mine expenses £10,150.—The mine superintendent, under date 22nd December, reports—viz, No. 6 level south drift No. 1 stope height of stope over back of level 48 feet, length 28 feet. Ore scattered. Value from 40 to 70 ounces silver per ton, gold ¾ ounce per ton. South drift winze depth sunk 13 feet, total depth of winze 32 feet, width of ore 2 feet 6 inches, value 25 to 90 ounces silver per ton, gold 3–10ths ounce per ton. No. 6 level No. 6 old ore body stope length of stope 28 feet, height over back of level 40 feet. Ore scattered. Value 20 ounces silver per ton, gold 1-10th ounce per ton South drift underhand stope depth of stope (under bottom of the drift) 7 feet width of ore 7 feet. Value 45 ounces silver per ton, gold 3-10ths ounce per ton, copper 5 to 8 per cent. No. 7 level south drift south west cross drift distance driven 14 feet, total distance driven from winze or main drift 70 feet; width of ore in forebreast 3 feet, value 20 to 40 ounces silver per ton, gold 2–10ths ounce per ton. No. 8 level south drift west cross drift distance driven 2 feet, total distance driven from main drift 46 feet; width of ore in forebreast 9 inches, value 20 ounces silver per ton, gold ¼ ounce per ton. South drift winze the south drift winze has been retimbered (from No. 7 level) for a depth of 50 feet. 43 feet up in the winze over No. 8 south drift we have commenced driving a midway drift west for the purpose of proving the ore in that direction. No. 9 level south drift distance driven 11 feet, total distance driven from shaft cross cut 57 feet, width of ore in the forebreast 7 feet. Value from 16 to 36 ounces of silver per ton, gold 2-10ths to 6-10ths per ton, copper 3 to 8 per cent. We have had ore from this drift which assayed silver 135 ounces per ton, gold 3-10ths ounce per ton, copper 24 per cent. The appearance of this drift has materially improved since my last report.—No. 10 level shaft cross cut: After passing at a distance of 123 feet through ore 3 to 4 inches wide, assaying 118 ounces silver, gold 69-100ths of an ounce per ton with 8 per cent. of copper, the cross cut was continued an additional 8 feet, where ore was again encountered about 3 feet wide. Value 11 to 14 ounces silver and gold 25–100ths to 45-100ths of an ounce per ton. Now drifting north and south. The ore in the north drift is 4 feet wide and as solid and compact as it is possible to be. An average sample of this ore assayed (2)st December) 16 ounces silver, gold 15-100ths ounce per ton. The drift going south will certainly improve when we get back under the winze sunk from No. 9 level, and I look for a still greater improvement when we get under the body of ore we have been drifting on in No. 9 south drift. We have found for the first time since I have been connected with the New Guston Mine stones of ore containing free gold. During the present week we have discovered in several stones good ore extracted from No. 9 south drift free gold. I do not look for the discovery of any quantity of this ore, but at the same time it is an encouraging feature to find free gold associated with ore assaying 100 ounces silver per ton, and extracted from No. 9 level, or next to the deepest level in the mine. Owing to snowfall and severe weather the erection of the Austin smelter has been deferred until March.

**Orita.**—H. J. Prender, December 12: Run No. 72: I cleaned up on the 3rd instant £1836·12, and the same night had the water on to the branch sluice where up to the present we have been washing steadily, and I am doing my best to make a better run. The last run bearing in mind the amount of gravel washed was not up to my expectations nevertheless our cost is for five weeks, and the above return gives a profit of about £450. Everything here is in good running order and nothing to call for special remark.

**Oscar Gold.**—The following report has been received from the mine dated Haugesund January 10: Hodgkinson's Lode: The 500 level north carries a strong lode 5 feet in width, of which nearly 3 feet is quartz of good mill quality well mineralised and assaying from 4 dwts. to nearly ½ ounce gold per ton. The stopes working in back of 400 north show quartz varying from 10 inches to over 2 feet in width. The whole of this quartz is mill stuff assaying for free gold over ¼ ounce to the ton. Owing to want of miners we are unable to commence working on shute below 400. All the ground therefore between 400 and 500 levels is intact. An intermediate level started north from the shaft between the 300 and 400 levels shows a capital run of mineralised quartz over 4 feet wide, about 2 feet of which on footwall carries galena and assays gold value nearly 9 dwts. per ton. The quartz in winze in 200 is just now somewhat intermixed with the country rock, its aggregate width is about 2 feet, contains a little galena and assays value for gold 6 dwts, 12 grains to the ton. We have had to discontinue the rise in the back of 200, owing to lack of miners. Stopes working in back of the 150 south shows quartz from 6 inches to nearly 4 feet in width, same varies in value from 2 dwts. to 1 ounce 12 dwts. gold per ton, being richest where narrowest.

**Ouro Preto.**—Mining report dated December 16: Passagem mine: Incline shaft No. 1: The opening in roof for the 47) level has been completed and driving at this level was commenced. The north east end was advanced 4·40 metres and the south west end 4·60 metres. At present on the upper half of level is in ore, but this was also the case at the 40) level and it is expected that the north east end especially will soon get into strong lode. Incline shaft No. 2 was sunk 7·00 metres full size in strong quartz lode, but the ore continues to be of very low grade; the assays this month showing like last month about 6 grammes per ton. It is expected that nearer the hanging wall the lode will be of better quality, and this will soon be tested by a rise to meet the 435 metre level, 315 end north east, driving has been resumed and the end was advanced 1·89 metres. Quartz has been rising from the floor and is standing half the height of the end with quartzite over it. End from winze at 315 north east was driven 4·30, and having reached the hanging wall has been suspended. No more quartz has been met with, and it appears that the ore has taken a north east dip as it is now found in the 365 end north east. The branch passed through some time since is now being stoped, communication having been made to the bottom crosscut from the stope below. Crosscut No. 2 at 365 north east was driven 3·30 metres and continues in hard quartzite. 365 end north east was driven 5·30 metres full size in quartz with vertical strings and lines of pyrites. 400 end north east was driven 6·90 metres in mixed schist and quartzite.—435 end north east: The end having followed a floor in the lode, a crosscut has been driven 2·60 metres to the hanging wall and ore is being stripped towards the wall for straightening level. The lode exposed is over 3 metres thick composed of good quality quartz with tourmaline ore. 435 end south west was driven 1 metre in schist and quartzite without ore. Rise at 435 south west was advanced 4·30 metres. It carries a branch of lode about 1 metre thick composed of quartz and pyrites, the lower part of breast being in schist. 365 end south west was driven 5·70 metres in schist without change. Crosscut at 365 under No. 1 shaft is being driven to give a tip under floor of shaft for conveying stile to fill stopes. It was driven 7·70 metres. Rise from shaft at 365 was advanced 2 metres and holed to level over 365 forming a convenient shoot for ore from stopes lately opened at that level. End over 365 was driven 5·30 metres. It carries a branch of pyritic ore about 50 centimetres thick. 315 end south west was driven 4·40 metres. The quartz appears to be again opening up. Rise from 315 south west was advanced 2·80 metres. The lode carries a great deal of schist the ore consisting chiefly of a branch against the roof about 70 centimetres thick.—Stoping: The total amount of ground stoped was again much higher than usual being over 2300 cubic metres and the stock of ore in the mines has consequently been much increased. At the 400 level between shafts the lode still shows a fine appearance. In the No. 1 stope on account of the great height of lode only one half is being carried in the stope the remainder being left for taking down later. In the No. 4 stope the lode is 5 metres thick almost all of which is fair quality milling ore. A trial of 200 tons is being run through the 24 mill to give a better idea of its value. At the 435 level some preparatory stoping has been done all along the level to open out the ground and it is seen that for at least 50 metres a strong massive body of ore is holding without interruption. The new stope from 365 north east continues to open up well the lode being about 3 metres thick of fair quality quartz. At the level over 365 south west the stope is now fairly opened up and shows a strong body of lode which no doubt holds up to the 315. Stoping here is now suspended to leave the ground ready when required for new mill. Another stope is also being opened to prepare ground for increased production. Under the 315 between shafts the ore body still continues of a strong massive character and is composed of quartz with strings and patches of pyrites. Most of the ore broken in this stope is being stacked. In the stope in crosscut at 315 north east the quartzite has nearly cut out the ore and the stope is almost exhausted. Part of the men have been put to try on bunches of ore passed through further in the level. At the 265 south west three stopes are being worked, but the lode though carrying in places good patches of pyritic ore is generally much mixed with quartzite and schist. Over the 235 south west also the lode is a good deal mixed with schist but a vein of rich pyritic ore is being broken along the footwall. The outer stope at this level has been holed to the 215 level. The stops in rise 29 over adit has been stopped as the ore is not required and the men put on exploratory work at the same level. Under the 215 north east the lode has again opened up somewhat, a vein of pyritic ore having appeared along the footwall and the stope is still being carried forward. A new stope is being opened under the same level on a pillar in the side of No. 2 shaft and the quartz is of good appearance.

**Poorman Consolidated.**—The following report has been received from the manager at the mines under date December 2: Since report of November 13 have wired you on November 27 as follows: "The mine continues to look about the same. Since last report have started crosscutting towards Oso. Snowing very hard, roads blocked." Since my last report we have discontinued the North Empire drift on account of air and have put our men to crosscutting east for the Oso vein after reaching which we will start a raise to connect with the Oso winze. When this is accomplished we shall have the finest of air, and can push developments and open up the North Empire and Oso ledges for at least 1000 feet further. Since last report we have extended drift on the North Empire 17 feet. The ore is somewhat scattered, but as we are passing through the dyke north of the Oso dyke this is to be expected and the strength of the ledge in passing through this dyke demonstrates the North Empire to be a very strong vein and we have every reason to look for a large and continuous chute of ore south of the dyke. This dyke is believed to be 40 feet or 50 feet across. I send you enclosed assay returns on sample of the white quartz from the North Empire vein showing $270 in gold and $11 in silver. In the Poorman we are now 15 feet beyond the old winze mentioned in our report of November 18 as having been encountered. The ore in the face is of the same high grade and character as my last report. It is my intention to discontinue this drift after 10 feet or 15 feet more have been run and taking the miners and placing them in the cross cut to the Oso and work night and day shifts as I find that we have no more room for the storage of ore. This body of ore is now opened up to the extent of 255 feet, ready for stoping. My object in pushing the crosscut to the Oso is twofold: first the necessity for air, second to tap the rich ledge under the Oso winze, and from this work all the ores above No. 3 by chute through the Belle Peck tunnel, dropping all the ores through this chute for conveyance to the mill. This will save a hauling distance of 2000 feet of very heavy grade. The old winze we have been unable to further explore, it having been filled in from above with all manner of debris. After consulting with our foreman, we have decided to put a stope on the north side of the winze and go up beyond where it is covered, as it would be a hazardous and dangerous undertaking to open from below; but it is very satisfactory to know that our ore holds out as much above No. 3 drift as this old winze demonstrates. I send you by to-day's mail a map of the consolidated properties, showing the workings by actual survey of the Oso or No. 3 Tunnel and Belle Peck Tunnel, with location of crosscuts, shafts, winzes, &c. On account of snow it is impossible for me to survey the South Poorman, Silver Cord, and Jackson, but I have been able to secure the details of the surface survey from our local surveyor. I have only had an opportunity since my last to visit one tunnel started on the South Poorman towards the north, and find that the ore is standing intact for a distance of 450 feet in length by about 200 feet (average) in height and 18 inches to 2 feet wide; but, as it is our intention to continue the Belle Peck tunnel through the mountain and place all of our works on the north side instead of the south, it is useless to continue the South Poorman tunnel.

POORMAN CONSOLIDATED MINES.—ASSAY OFFICE REPORT.

| No. of sample. | Name of lode | Weight in oz. Gold. | Silver. | —Value— Gold. | Silver. | Total value per ton. |
|---|---|---|---|---|---|---|
| 25 | North Empire | 13·50 | 11 | $270 | $11 | $281 |

(Signed) R. E. EULER, Assayer.

Silver City November 25, 1893.

**Queen Cross Reef.**—Mining manager's report for fortnight ending November 28: Since my last report the contractors for No. 3 level south have driven 11 feet, total distance from underlie 272 feet. I would recommend this level to be stopped as the ground is very hard and dry and does not look very encouraging. Stoping has been continued over No. 5 level on from 1 foot to 18 inches of stone. We have finished a crushing of 208 tons for a yield of 385 ounces 13 dwts. of smelted gold. We have hauled 50 tons of stone for the fortnight, 30 tons of stone in the paddock. Davis and party contractors for sinking the vertical shaft have sunk 15 feet, total distance from the surface 675 feet. The ground has been very favourable for sinking. We met with a lot of floors coming in from the southern end of the shaft 73 feet below the timber.

**South-East Mysore.**—Fortnightly report of Captain M. Scantlebury, mine agent, dated December 27: Beresford's Shaft: This shaft has been sunk 6 feet 6 inches, now 29 feet on the underlie of the lode and 126 feet 9 inches from surface. The lode maintains its width of 4 feet, and is composed chiefly of dark blue quartz. We occasionally see beautiful stones of quartz studded with gold. Four samples have been assayed with the following result: No. 1 sample 6 dwts. 12 grains, No. 2 sample 9 dwts., No. 3 sample 12 dwts. 6 grains, No. 4 sample 1 ounce 7 dwts. 6 grains. The water is very quick, which very much retards the progress in sinking.—Pigott's Shaft: This shaft has been sunk 8 feet, now 108 feet 6 inches from surface. We have about 40 feet more to sink to reach the lode, which will take 10 weeks to accomplish. The rock is hard, and this will be fairly good work for hand labour.—Office Note: A sample from a box of quartz recently sent home and referred to in Captain Scantlebury's report of November 1st has been assayed and gave a result of 3 ounces 19 dwts. 17 grains of gold per ton.

**Santa Barbara.**—The directors of the Santa Barbara Gold Mining Company (Limited) are in receipt of advices from T. S. Treloar, dated Parl, 4th and 13th December: The mineral delivered at the spalling floors from the mine during the month of November amounted to 746 tons, of which 89 tons were rejected as refuse stone and 657 tons treated at the stamping mills. The total produce obtained was 2044 oitavas of amalgamated gold or equal to 3·111 oitavas per ton stamped. This produce of 2044 oitavas of gold valued at 8s. 6d. per oitava, amounts to £868 14s. sterling, and the estimated cost for the month at Exchange 10½d. being £1009 1s. 7d., leaves an estimated loss of £140 7s. 7d. for the month of November. The mine captain reports as follows for November. No. 3 Stope south: This stope has been extended 3 fathoms and 5 inches. The lode has shown a slight improvement at the head of the stope, with this exception there is no change to note. The stone obtained from same has been of the average quality. No. 9 stope south has been extended 8 feet. The lode has maintained its size throughout the month and the mineral from same has been of good quality.—No. 9 winze: This winze has been sunk 8 feet 6 inches in a lode averaging 5 feet wide of ordinary quality. No. 9 end has been driven 3 feet 6 inches. The lode has shown a slight improvement in this drivage, but on the whole the mineral obtained has been of low quality.—Shaft: Through the irregularity in the attendance of the force, only a few holes have been blasted here towards the end of the month, consequently there is but little change to note.—Timber work: The timbermen have been engaged in cutting hitches and headings for the logs as required, pumping water from the tanks and from the bottom of the Hollands shaft, &c. Six logs have been put in the No. 8 stope to keep up balk ground and two logs in the No. 8 stull and lathed with candela poles and loaded with unproductive stone to carry the tramroad in the bottom of No. 7 level, and one log in the No. 9 stull and lathed with candela poles and loaded with unproductive stone to carry the tramroad in the bottom of the No. 8 level. Five rolls changed under flat rods and two under the wire ropes in the deep adit—10 feet run of tramroad laid in the No. 8 level and 70 feet run of rail iron renewed on the skip road. The output of stone from the mine is 1187 wagon loads, of which 692 came from the No. 8 stope, 462 from the No. 9 stope, and 32 from the shaft. The number of wagon loads per man drilling is 31·66, and the total number of holes drilled in the mine 1567, of which 524 were in the No. 8 stope, 422 in the No. 9 stope, 93 in the No. 9 end, 186 in the No. 9 winze, and 62 in the shaft.

**Victory (Charters Towers).**—Mining manager's report for fortnight ending December 3: No. 1 shaft: Drive on footwall reef at No. 7 south level extended 1½ feet, total 122 feet. Reef in face 4 inches and of poor quality. Stopes about 3 to 12 inches medium. Blind shaft sunk 9 feet without change, total 34 feet. Stopes above No. 11 south level show 12 inches poor quality. Below this level on north side of shaft 12 inches stone. On south side of shaft am putting in a drive 30 feet below No. 11, now in 30 feet on 10 to 20 inches medium quality stone; at present the face shows 18 inches. Stopes on Papuan reef show 3 to 12 inches good stone. Raised 75 tons.—No. 2 shaft: No. 1A west level driven 6 feet, total 72 feet. No change to report. No. 1 west level driven 14 feet, total 186 feet. Removed the men from face to follow the stone passed 100 feet back. Intend to turn the drive at this point to reach the footwall. No. 2 west level driven 18 feet, total 356 feet. No stone in face at present. Winze in this level down 20 feet, showing 6 inches crushing stuff in bottom. Stopes above No. 3 east level average 12 inches fair quality. In the rise and stopes in this level mentioned in last report the reef averages 2 feet medium quality. No. 4 east level driven 25 feet, total 358 feet, carries a good soft formation with 18 inches of fair stone. Stopes above 1 to 2 feet medium. Winze in this level sunk 18 feet, total 62 feet. Reef in bottom 18 inches fair quality. Eastern underlay sunk 16 feet, total 76 feet. Carries 5 feet of reef of good quality in bottom. Raised 255 tons.

# INSTITUTE OF MINING AND METALLURGY.

## PAPERS BY MR. H. L. LAWRENCE AND MR. ARTHUR DICKINSON.

THT third meeting of the third session of the Institute of Mining and Metallurgy was held on Wednesday evening in the Lecture Theatre of the Museum of Practical Geology, Jermyn-street, S.W., under the chairmanship of Mr. GEORGE SEYMOUR, A.R.S.M., M.Inst.M.M., when papers were read by Mr. H. L. Lawrence upon "The Dressing of Zinc-Blende Ores and Magnetite at the New Pierrefitte Mines, Hautes Pyrenées, France," and by Mr. Arthur Dickinson "On the Assaying of Arsenic Ores."

On being called upon by the Chairman to read his paper on

### DRESSING OF ZINC-BLENDE ORES AND MAGNETITE AT THE NEW PIERREFITTE MINES, HAUTES PYRENEES, FRANCE.

Mr. LAWRENCE (member) said: "The New Pierrefitte Mines contain, among other ores, zinc-blende, intermixed with magnetite, which occurs minutely disseminated through the blende and accessory, galena, and gangue. The intermixture is very irregular. Magnetite aggregates will vary from the minute quantities to such a proportion as to form a practically massive mineral. The formation also contains small quantities of magneto-pyrite. Very ferruginous varieties of zinc-blende as christophite and marmatite are also present. On the average this ore may be taken to contain 20 per cent. of zinc-blende, 20 per cent. of magnetite, 1 to 2 per cent. of argentiferous galena, the remainder being composed of gangue. On applying a hand magnet to the ground ore, the different admixtures of magnetite, gangue, galena, and blende become at once apparent. This ore is accessory to the richer blende ores, and exists in great abundance.

#### Argentiferous Galena.

"It is not the intention of this paper to deal with the economy of the mines, nor to describe the geological and mineralogical features of this interesting formation. I will, however, preface a few words in explanation of the situation. The chief product of these mines is argentiferous galena, which is contained in a granulite gangue, irregularly impregnated with magnetite. The blende is won from branches and spurs of the main bodies. When this mineral is massive, magnetite is rarely and but sparsely intermixed with it, but is confined to the gangue, so that mining and dressing is of the most ordinary and easy description. Marketable blende can be procured by taking care to place the shots so as to break a minimum of the gangue; then the roughs are handpicked, yielding pure blende and mixed blende; the latter is stacked, the former passes on to the market. The mine fines contain only small quantities of ferruginous gangue, as this substance is very hard, and shows no tendency to crumble; a marketable blende can therefore readily be won on jig and buddle, leaving but a small quantity of middlings which contain an excess of magnetite. Not that the marketable blende is quite free from magnetite, but the high metallic contents of the former, and the small quantity of the latter, render an average of over 45 per cent of metallic zinc possible. When, however, the blende is less massive, then there is invariably more magnetite present both in gangue and ore. The blende itself is also more ferruginous composition, and consequently contains less metallic zinc, and above operations become no longer possible. It is to treat this latter class of ore, and also the middlings and bye-products of the former operations, that the works hereinafter described were erected.

#### Magnetite.

"The magnetite can be eliminated before dressing or after. On first thoughts the former idea would seem the most natural —*i.e.*, crush down the ore to its required size, pass it over an approved magnetic separator—taking out all magnetic parts—and then proceed to dress in the ordinary way. Following this scheme this three products would be made before dressing:—(1) Ore free from magnetite; (2) Middlings consisting of grains composed as mixture of galena, blende, and magnetite; (3) Pure magnetite.

"The second product would then be further disintegrated and passed over a second separator and dressed without further difficulty. This method, however, has the following disadvantages:—The magnetic separator must be both reliable in magnetic and mechanical function. It would have to work continuously to keep pace with the output; any slight defect in electric current or leakage would necessitate stoppage of the whole works. If any such defect were not *immediately* noticed (and such defect is not easily detected) the whole pulp would be charged with magnetite, rendering it necessary to clean out every jig and buddle and contrivance on the floors. It would have to stand proof against varying quality of mineral fed to it —*i.e.*, for some minutes it might have masses of magnetite to deal with; at other times there might be little present in the ores. A precise adjustment to minimise middlings under such conditions would not be easy. It would have to be adapted to treat unsized material, which for precise work as would be required here would be a severe test. Very perfect magnetical separation would be necessary—viz.: We are working on an ore containing, say, 20 per cent. magnetite 20 per cent. blende 1—2 per cent. galena, the remainder being composed of gangue. Supposing the separator to leave 3 per cent. of magnetite with the headings, this will be found after dressing with the blende representing 15 per cent. of its bulk, which would render it unsaleable, or at least depreciate its value abnormally. Granted a separator could be got to fulfil these conditions, there is still a further objection to treating this class of ore magnetically before dressing it, as the galena which forms a considerable and essential part of the asset is mostly heavily impregnated with magnetite, rendering it often quite magnetic enough to pass into the magnetite compartment of a separator.

"When dressing precedes the magnetic separation, the process would be as follows:—Crush down the ore to its required size, classify, treat the coarser classes on jigs, the slime on buddles or tables. The jigs can be made to yield:—(1) A product of galena and magnetite, which presents no difficulty in finally cleansing; (2) A product of magnetite and blende, which can be magnetically separated, giving—(*a*) Pure blende for market; (*b*) Magnetite; (*c*) Middlings consisting of particles of mixed blende and magnetite, also all magneto-pyrite which is not magnetic enough to pass into the magnetite—the buddles would yield in the first washing; (*d*) Headings consisting of galena, blende, and magnetite; (*e*) Tailings consisting of waste. The headings can now be magnetically separated and the final freeing of galena from blende can be effected on Rittinger tables or other appliances.

"Comparing the two methods—*i.e.*, dressing before magnetic treatment and magnetic treatment before dressing—I am of opinion the former has the advantage, as the valuable galena is freed from the blende at the outset, and no recrushing of these two minerals together is necessary, thus avoiding the tedious and often wasteful operation of treating these slimes. Further, the middle product is minimised in quantity and confined to the very poor, and, I might say, almost unprofitable ore, consisting of highly ferruginous blende and magneto-pyrite. The magnetic separator having less bulk to treat can be regulated and adjusted to requirements of each class of ore, which can be passed in rotation as demanded."

#### The Works described.

It was on this principle that the works at the mines described by Mr. Lawrence with the aid of diagrams, were erected. The ore, he explained is dumped on to a platform, and fed to a pair of Cornish rolls fitted with Raff wheel. The main sizing screen is wire wove, and has four holes to the inch. A bucket elevator carries the pulp to the three classifying trommels. The first of these is a Cornish gauge, No. 17; the second No. 28; the third, No. 36. A Spitz-gerinne divides out a fourth class. Four four-hutched Green's jiggers are arranged to receive and treat the classified pulp. The overflowing slimes pass on to two Spitzkasten, and are separately treated on two Rittinger revolving continuous buddles. The waste is here extracted, and the headings are magnetically treated on the separator; the final separation of galena and blende taking place on two Rittinger percussion tables.

Proceeding Mr. Lawrence said:—"In the first hutches of all four jigs all pure galena, and all galena mixed with magnetite is caught. The second hutches deliver a mixed product of galena blende and magnetite. This is rejigged on auxiliary machines which are of exactly similar pattern as the others. Here the last remnants of galena are freed from the remaining pulp, which consists of blende and magnetite. Nos. 3 and 4 hutches give blende and magnetite with most of the magneto-pyrite. A certain proportion of this latter mineral can be made to pass over the tails. The first or galena products, both from main and auxiliary jigs, are passed on to the ordinary fine roller house, where it is cleansed in conjunction with the jig-middlings from the main lead dressing floors. The blende products (Nos. 3 and 4 hutches) from main and auxiliary jigs consist for the most part of homogeneous grains of magnetite and blende. There is, however, a certain proportion (chiefly coming from the coarsest jigger) of stuff composed of grains of which are a mixture of blende and magnetite.

"We have now to separate the pure blende from the magnetite and prevent the grains of mixed blende from passing into the latter. In choosing a machine for this work I first addressed myself to the *Silber* and *Bleibergwerk Friedrichssegen bei Oberlahnstein*, which company I understand have had a magnetic separator designed and patented by themselves in use for many years under somewhat similar circumstances. They referred me to Messrs. Sauter Harlé and Co., of Paris, who they informed me were their agents in France. Addressing myself to Messrs. Sauter Harlé, I found that they did not make an exactly similar machine to that of Friedrichssegen. By comparison of the two it will be at once observed that while both have stationary magnets the encasing and revolving drum of the former carries the magnetite over it, while in the latter it is thrown underneath, the magnets in the first case being placed in an higher segment of the drum than in that of the second machine. I thought the Sauter Harlé modification an improvement as it allowed of making a middle product, so necessary to the success of our operations, by partitioning off. It was decided to order one as an experiment, the price being but 1500 francs. Electro force needed for the magnets was gauged at 910 watts, which we could supply with the dynamo used for electric lighting. Experiments showed that the electro magnetic force was hardly sufficient to quickly and firmly catch up the larger grain, and throw them into the magnetite compartment. Otherwise, by adding a catch-board and the compartments for middlings, the machine was satisfactory. It was therefore decided to arrange for machine with magnets sufficiently strong to develop a magnetic force corresponding to 1680 watts, and also to build the framework and bearings somewhat more substantially. The catch-board and division, which were marked in red in the diagram shown, were added at the mines, after careful experiment as to their position and size. This machine has a capacity of passing 20—30 tons of mineral in 12 hours. The feed has to be regulated according to size of the ore, nicety of work required, and proportion of magnetite to other ingredients. It has been at work here for over a year and has given every satisfaction. The price of same is 4200 francs f.o.b. Paris. This separator works on dry ores only. The wet products from the jigs are taken on to sloping platforms outside the building to allow the access of moisture to drain off. From there they pass on to drying floors. These consist in a double series of brick flues; each series has an ordinary brick furnace. The flues are covered by cast-iron plates 15 millimetres thick, resting on the brickwork. At each cross joint of the plates a rail is thrown across in order to prevent leakage between two plates. The chimneys are 8 metres high. The draft has been found to be all that is required.

"The ore once dry is passed on the separators. The number of revolutions of the drum best adapted for good work has been found to be 56 per minute. The feed can be regulated by opening or shutting the hopper door. The coarser stuff requires slower feed. It is the rule to pass the slimes on machine; the product of the coarsest jig is passed separately, while the products of the three finer jigs can be passed jointly on the same. The dry ore is allowed to accumulate until there are 20—30 tons when it is passed. One or two day's work with the separators suffices to deal with the week's output. The apron must be approached when magnetite is in abundance, and can be pulled back when the ore is less charged with same.

"The proportion of blende to magnetite and middlings naturally varies with the nature of the ore. As an example, I will here give the relative quantities obtained in June, 1893, from the jiggers:—

| | Kilos. |
|---|---|
| Mixed product from the jigger | 120,000 |
| (*a*) Quantity of marketable blende obtained assaying 48·6 per cent. of metallic zinc, containing 2 per cent. of magnetic matter | 89,400 |
| (*b*) Quantity of middlings obtained | 18,100 |
| (*c*) Quantity of magnetite obtained | 43,500 |

"The middlings have been found to be of such little value, that they have been left on one side pending improvement of the metal market. In drying the fines the room on the drying floors is found to be somewhat cramped; the dust resulting from this operation also is injurious to the jigged products. To properly handle this material, a separate floor should be erected to dry it; or, better still, a wet magnetic separator adopted. I should fancy the one designed and described by Mr. Walter Basset before this Institution on June 15th 1892, would be a very suitable apparatus. The cost of dressing as just described including coal and repairs, is 6 francs per crude ton of ore.

"An analysis, made by Dr. Morgan, of Swansea, in August, 1892, of the magnetite product is as under:—

| | |
|---|---|
| Insoluble matter | 9·80 per cent. |
| Oxide of Iron | 76·51 " |
| Alumina | 1·29 " |
| Sulphur | 0·40 " |
| Carbonate of Lime | 1.85 " |
| Carbonate of Magnesia | 7·29 " |

"This ore has not yet found a market on account of its excess of sulphur; an inexpensive roasting would render it an excellent iron ore, for which a ready sale can be had. There is no doubt that this iron ore will be found to be a great resource to these and neighbouring mines, when it is utilised as a bye product, and no longer regarded as merely an encumbrance to the winning of the more precious argentiferous galena and zinc-blende." (Applause.)

#### DISCUSSION.

The CHAIRMAN regretted the absence of Mr. Charleton, who had had considerable experience on the subject which Mr. Lawrence had treated, and who, in consequence of his inability to be present, had sent a few remarks written upon paper, which he (the Chairman) would read.

Mr. CHARLETON commenced by stating that Mr. Lawrence alluded to the difficulty of obtaining information about American machines, one of the best of which was, he believed, the Chase magnetic separator. The two chief features of this machine were first the smallness of the magnetic wheels and the peculiar structure of the magnets; and, second, the fact that it could be worked wet. This latter advantage was very great, for not only did the water lay the dust and wash the mineral, but it also decreased the weight to be borne on the lower side of the belt. The machine separated the material into heads, middlings, and tails. The ore was fed from a hopper on to a horizontal belt, which moved to the left round the first magnetic drum. As the material passed downwards the tailings fell into a tank, and when the material came opposite a row of fixed magnets above the belt the middlings fell into the next division. The pure magnetite was carried round a second magnetic wheel, and as it ascended it left this belt, and was attracted by a third magnetic wheel to a belt passing round it. The ore was carried up this belt, add was delivered over a pulley into a receptacle outside the tanks. As the material passed round the second magnetic wheel and was attracted to the third wheel any clinging dust and non-magnetic particles were separated from the magnetite. There was a driving pulley and tightener to give motion to the first belt and to keep it in place. The magnetic wheels were each made of a soft iron roll of small diameter (4 inches or less) and 3 feet in length. In its circumference there were two spiral grooves cut, like a double-threaded screw. The section of the thread was about 1 inch square. In each of these grooves there was a coil of copper wire, and the electrical current in one went in the opposite direction to that of the other. These opposing currents made the two screw threads into continuous helical poles of opposite polarity. The magnetic field thus made was extremely strong, and the cost of the machines was very low, while they could handle a large quantity of stuff. A thin brass tube was slipped over the rolls to protect them. The horizontal magnetic poles were alternately north and south, and they were made by winding a soft iron yoke alternately in opposing directions, and inserting these between these windings soft iron bars to form poles. This arrangement set up a tumbling motion in the mass of material, so that the middlings soon dropped off the band. The band was made of cotton duck, and it stood the blows of the particles of ore by yielding under them. The chief wearing parts were the bearings of the shaft and belt. The cost of dressing at Pierrefitte on an output of 21,449 tons of crude ore in 1891 was 4·78 frs.=3s. 10d. per ton. The difference between this sum and Mr. Lawrence's figure represented, probably, the cost of magnetic separation chargeable in addition in 1892.

Mr. JOSEPH GARLAND said that the paper had more interest for him than it would perhaps otherwise have had for the reason that just 10 years ago this very month he examined the mines for the old company. At that time, he found from his note book, the lodes were very hard, yielding a rather inferior quality of lead ore, not often occuring in pure lumps, but mostly disseminated through the veinstone, and much mixed with blende and magnetic iron ore, the lodes being very expensive to work, and the ores difficult to separate and dress up to the ordinary standard. The water-dressed blende, when free from lead ore and gangue was so mixed with magnetic iron ore so as to contain scarcely 40 per cent. of zinc. At that period magnetic separation was not so much before the mining public as at present, and no trials had then been made by this process at these mines. He had listened, therefore, with great interest to the author's description of the method which he, it seemed, had successfully adopted to separate the deleterious magnetite from the blende and galena. The paper would, no doubt, prove useful to the mining members of the Institution, as it might be their duty any day to advise on the proper treatment for such complicated and refractory ores. No mention was made in the paper of the quantity of silver contained in the galena, and he should be glad to know this, as he read in his old notes that the loss of silver in dressing by water was found to be very considerable.

Mr. RICKARD pleaded guilty to having allowed silver to escape in the treatment of galena. The same was the case, he believed, with most who had to do with galena, though the experience was by no means a unanimous one, as he could show by citing his own experiences at the Pontgibaud and Argentine Mines. To his thinking the author had certainly established beyond a doubt that the method he was pursuing of submitting his ore to a preliminary dressing before using the electro separator was a good one. He was to be congratulated, too, on the very great tenure of his product. A percentage of from 48 to 49 was a very creditable product, indeed, for blende, and the cost of 6 francs per ton for the combined operations did not seem at all excessive, though the improved automatic machinery of to-day would probably reduce the price some 20 or 30 per cent. The success at Pierrefitte simply added another to the seven or eight cases of success with that particular process. He should be glad if the author would state whether it was applicable to any other kinds of ores than those he had mentioned, and also whether he had never in applying it reverted to another means of dealing with the stuff—viz., that of calcining to get rid of the zinc, and reducing the residuum by means of fire.

Mr. A. L. COLLINS feared he could hardly add much to the information which had been conveyed by the paper, seeing that he had never had any experience of magnetic separation upon any working scale. He had once carried out a few experiments on the separation of low grade blende and magnetic pyrites, both by roasting, so as to obtain a soluble sulphate of zinc, and by direct magnetic separation, but they did not come to any conclusion which he was able to regard as satisfactory. As to Mr. Rickard's question whether the process was applicable to the separation of any other ores of iron than magnetite or chalybite, some four years ago a case in point had come under his notice. At Reocin, in the province of Santander, Spain, they had large amounts of ore which consisted mainly of ferruginous calamine and earthy or calcareous brown hematite, which it was impossible to separate by hand picking or dressing. This ore was crushed and roasted in reverberatory furnaces with an admixture of small coal, by which means the hematite was reduced to magnetic oxide of iron. On subsequent treatment by magnetic separators, not unlike those described in the paper, it was found that this artificial magnetite was easily separated, and saleable zinc ore left behind. The expense of roasting must have been considerable, but as the calamine ore was always roasted in any case before export, to lower the freight charges, it was not so great as it seemed.

Mr. CLAUDE VAUTIN said that the subject treated in the paper was a very interesting one, and the work lately done by Mr. Blake in the United States threw a good deal of light upon it. Though subject of magnetic separation was a very fascinating one he

hardly thought the results obtained by Mr. Lawrence justified him in saying it was a success. He was quite unable to take Mr. Rickard's view that 48 per cent. was a good product, for he knew that at the present time in the United States they were producing a blende containing from 60 to 62 per cent. of iron. Another disadvantage of the process Mr. Lawrence had described was that a considerable amount of middlings was left behind, which Mr. Blake's process entirely removed.

Mr. J. H. COLLINS thought they had had that evening an example of the kind of paper that was wanted by the Institution. It did not deal at all with generalities, but embodied the experience of one who had actually worked himself upon a large scale. About the paper he did not propose to say much, but he wished to mention that one of the earliest and most successful workers in the magnetic field was Mr. King, whose machines had now been in operation for a large number of years, and who used permanent magnets instead of electro-magnets which he should think would be a good deal cheaper in working. Mr. Vautin would perhaps allow him to say, in answer to his remarks, that the mere fact that the zinc was only raised to 48 per cent. was no evidence that the separation was not a good one. There were many kinds of zinc blende, and from the appearance of that blende, which was highly ferriferous, he should say that 48 per cent. was not a bad result. Mr. Collins then proceeded in a friendly way to criticise the author's use of language, in substituting the phrase magneto-pyrites for magnetic pyrites, and for applying the word "pulp" to stuff which had not passed through the stamps. He also thought that it would not be possible to get rid of 0·5 per cent. of sulphur now present in the magnetite by roasting.

Mr. VIVIAN agreed with Mr. Collins that the sulphur could not be got rid of by roasting, and he did not share the hope of the author that magnetite might become a valuable bye-product, deeming the present price to be realised for such products unremunerative.

Mr. LAWRENCE, in reply, stated that he had incurred no loss of silver in dressing up the ores as high as possible. He concurred with what Mr. Rickard had said as to the possibility of advanced machinery decreasing the cost of dressing. He could not, however, agree that the blende was as rich when they made no middlings. His experience was that without making middlings they could not get up to 40 per cent. Mr. Vautin's reference to the Blake process reminded him that Mr. Blake deserved great credit for having introduced such an improvement. In conclusion he might remark, as Mr. Collins had done, that Mr. Vautin was beside the mark in referring to the high percentage of zinc to be obtained by the process. The standard was afforded by the nature of the zinc blende itself.

On the motion of the CHAIRMAN, a hearty vote of thanks was given to the author for his paper.

Mr. ARTHUR DICKINSON was then called upon to read his paper on

## "THE ASSAYING OF ARSENIC ORES."

Having stated the form in which arsenic is most widely used as a commercial article is that of white arsenic—$As_2O_3$—and that it is prepared by calcining the arsenical ore in a reverberatory furnace or in an Oxland or Bruckner calciner, by which operation the arsenic is volatilised and caught as white arsenic in long condensing chambers, Mr. Dickinson pointed out that the principal mineral from which arsenic is obtained is Mispickel $FeS_2 + FeAs$ with 46·6 per cent. of arsenic, usually called arsenical pyrites, and known locally as mundic. Copper pyrites is often associated with it. He had recently been called upon to study the various methods of assaying the ores, and to find out a method for every day use which should be rapid and accurate, and thought an account of his experiments would be worthy of record.

### Wet and Dry Methods of Assaying Arsenic Ores.

The ores to be assayed contained varying proportions of white arsenic from 10 per cent. to 40 per cent.; and, besides the ores, soot from the flues, with about 70 per cent. and upwards of white arsenic. The following examples showed how great a difference there might be between the results obtained by dry and wet methods. A dry method is most usually employed in Cornwall, and consists in simply calcining a weighed portion of ore. A rich sample containing but a very small percentage of sulphur was found by the dry method to contain 32·2 per cent. of white arsenic; when assayed in the wet way it gave 30 per cent. of arsenic or 40 per cent. of white arsenic, the difference in this case amounting to 7·8 per cent. In some cases, however, where much sulphur was present, the dry method would give too high a result. In the case of a pyritic ore, the results by the wet and dry methods respectively were 9·1 per cent. and 14 per cent. of white arsenic. There was, in fact, no fixed ratio between results obtained by the two methods. To determine the absolute amount of arsenic, there was no doubt that a wet method of assay was preferable.

### The Gravimetric and Iodine Methods.

There were three principal methods for the assay of arsenical ores:—(1) The gravimetric method; (2) the iodine method; and (3) the uranium acetate method. In the gravimetric method the arsenic, which was in solution as arsenic acid, was precipitated by magnesia mixture, and the precipitate weighed after as pyrarsenate of magnesia. Unfortunately, it is necessary after ignition the addition of the magnesia for the mixture to stand at least 12 hours before filtering, and therefore this method cannot be employed were rapidity is required. In the iodine method the arsenic is determined in the lower state of oxidation, the chemical reaction that took place on addition of the standard solution being represented by the equation $Na_2AsO_3 + 2I + H_2O = Na_2AsO_4 + 2HI$. For arsenites and arsenides the method was admirable. It has, however, proved to be of no practical value in the case of arsenical pyrites. Many experiments were made with a view to working by this method. It was found that even after digesting for many hours in the ferric chloride mixture solution was only partially effected. Again, an attempt was made by boiling with the $F_2Cl_6$ mixture, after lowering the boiling point by dilution with water to prevent escape of $AsCl_3$, but without success. The ore was then digested for some time with $F_2Cl_6$ dissolved in dilute HCl, the $CaCl_2$ dissolved in $HC_2$ being added; but again the results were unsatisfactory. Many attempts have been made to fuse the ore with fusion mixture, and it was found that, however slowly and carefully the operation was conducted, the arsenic always came off before fusion was effected.

### The Uranium Acetate Method.

It had been found that the third method—that in which the uranium acetate is employed for titration—was the only satisfactory one in the case of arsenical pyrites. In this method the arsenic was determined in the higher state of oxidation. Describing the method of assay adopted, Mr. Dickinson said: "Solution was effected according to the method given by Beringer. The ore was first treated with nitric acid, and then evaporated to a pasty condition, the residue mixed with ten times its weight of fusion mixture in a porcelain crucible, and then heated to fusion and kept in that state for a few minutes. (The fusion can take place at a fairly high temperature, and a muffle might very well be employed for the purpose.) The fused mass is allowed to cool and then treated with hot water. After filtering, the solution is acidified with $HNO_3$ and boiled, the arsenic being now in solution as sodium arsenate. The solution is neutralised with ammonia. Five c.c.s. of acetic acid solution are added, and when boiling it is titrated with standard uranium acetate solution, potassium ferrocyanide being used as indicator. It has been found to be always best to fuse in the first place with fusion mixture. A much more perfect separation of the iron present is effected—and, of course, ferric salts, which would require their equivalent of arsenic, must be completely removed. The method of taking to pastiness with $HNO_3$, making up with water and dilute ammonia, and passing sulphuretted hydrogen through for some minutes, is not satisfactory. The results were in all cases low. Using, however, the fusion mixture rapid and accurate results can be obtained. Though the balance used was of a simple description, and conditions not favourable to very accurate working, results on the same sample rarely differed by more than ·5 per cent. The whole operation can be completed in half an hour, and with a muffle for the fusions any number of assays can be conducted at the same time. The uranium acetate is certainly an expensive salt; at the present time it can be obtained for 2s. 6d. the ounce. The strength of the solution requires 34·1 grammes of the salt to 1 litre, in which case 100 c.c. would be equivalent to ·50 grammes of arsenic. Working with ·5 grammes of the ore 30 c.c. of the solution will be the maximum required, and the maximum amount of the salt required for an assay will be 15 grains, which is equivalent to rather less than 1d. The method is, in fact, very little if at all more expensive than the iodine method." (Applause.)

### DISCUSSION.

The CHAIRMAN thought the paper rather more of a chemical than of a mining or metallurgical paper, but they had been very glad to have it, and no doubt there were some gentlemen present who would be able to make some remarks upon it.

Mr. KITTO did not think that the 0·5 per cent. which the author had named as the limit of difference between his assays under the method he had described was any too accurate.

Mr. SUTHERLAND agreed that the days of analysing within 0·5 per cent. had gone by, although there were times when a rough and rapid method of assaying was very useful. He could not but regret that the author had not described his process in greater detail. For rough working purposes it might be feasible, but he himself should not care to endorse it without having some further experience of its application.

Mr. W. F. WILKINSON, who had assisted the author in the experiments upon which the paper was based, deplored the fact that the particular mine where those experiments were carried out was rather deficient in the necessary apparatus.

Mr. J. MACTEAR understood that the object of the author in bringing forward his paper had been to explain what was evidently a rough and ready method of assaying, and not such a process as would be carried out in a laboratory.

Mr. DICKINSON having replied with great brevity to his critics, a vote of thanks to the Chairman for presiding terminated the proceedings.

# METAL TRADES' CIRCULARS.

## THE METAL MARKETS IN 1893.*

THE course of the metal markets during last year is carefully reviewed in the annual report of Messrs. Stedman, Crowther, and Co., of 4, Lime-street, E.C. The following are extracts from that report:—

COPPER: All through the year there was an improvement in the statistical position but the crises in various money markets, the disinclination to hold copper, and in the latter half of the year the unprecedently large arrivals of the metal from the United States, combined to weaken the price of copper on warrants. Other kinds fell in sympathy, the bulk of the supply from the States being of refined copper this description was especially affected. A great deal of high quality copper was also sent direct to Continental ports for German and Russian consumption, largely taking the place of shipments from this country. India was a good customer both for copper and yellow metal sheets, and took a considerably larger quantity of Japan and Chili ingot and cake copper than in 1892. Although complaints of want of remunerative business were rife in the home trade the consumption in Birmingham and other centres was large. Foreign competition was keen in some descriptions of copper, especially that for wire for electrical work, and prices were consequently kept very low. The following were the shipments to British East Indies during the past ten years:—

| | 1884. | 1885. | 1886. | 1887. | 1888. | |
|---|---|---|---|---|---|---|
| Copper sheets | 10,151 | 10,407 | 8,674 | 10,276 | 1,909 | tons. |
| Yellow metal sheets | 10,494 | 11,895 | 13,363 | 10,348 | 2,675 | ,, |
| | 1889. | 1890. | 1891. | 1892. | 1893. | |
| Copper sheets | 6,449 | 4,359 | 6,117 | 5,825 | 6,260 | ,, |
| Yellow metal sheets | 8,021 | 10,408 | 7,701 | 9,856 | 10,047 | ,, |

Copper was at its highest in January, the price of G.M.B. on warrant being £46 12s. 6d. at the beginning of the year. The market fell almost continuously until it touched £42 15s. by the end of MAY. After a rise to £45 2s. 6d. in June a decline again set in, and in August £40 12s. 6d., the lowest price of the year, was reached. A good deal of buying, both for consumption and speculation, was induced by the low price, and the value improved £2 10s. by the middle of September. The great increase in deliveries at this time drew more outside attention to copper, as despite the big supplies, the total available stocks continued to decrease. Some doubt was entertained as to whether actual consumption could be represented by the large figures under the head of deliveries; these probably included much copper secured at the recent cheap rates by consumers for future use, and put into railway and other transit warehouses, where it is not reckoned as public stock. The available stock has now been falling month by month almost without a break since April, 1889, nearly five years; and, although there was an increase in the World's annual production of over 40,000 tons in the same period, this was absorbed, and an additional 70,000 tons from stock. Putting 1889 (when consumers' stocks, abnormally small during the reign of the syndicate, had to be filled up) out of the question—there still remains a reduction in stocks of 48,500 tons during the last four years, i.e., from 95,700 tons on January 1st 1890, to 47,295 tons on 1st January 1894; and, granted the continuance of consumption of copper to its present rate there is the prospect of a reversion to a higher range of values, should financial confidence be restored and no special load of copper be forced upon this market.—TIN: During the first two months of the year the price of Straits was maintained at £92 per ton at the average. In March the demand from the States to accumulate stocks, prior to the imposition of the increased duty that came into force on the 1st July, sent price to £95 5s. Even at this time it was felt that a heavy fall was in store for the market, and tin for dates when the duty would be incurred and be unavailable for American delivery, could only be placed at £4 to £5 backwardation. By the end of May £95 7s. 6d. was accepted for cash tin, and £94 2s. 6d. for three months prompt. The cessation of American orders and the collapse of the silver market caused a drop of £3 15s in the week ending the 1st July. From this time cheaper offers from the East as exchange fell, and the absence of influential support brought the value gradually down from £84 in July to £74 17s. 6d. in NOVEMBER; there was an advance of £76 15s. in December, but this was swept away by the end of the year when the quotation was £74, the lowest price since 1885.

The stocks of foreign tin here and in Holland, including afloat, on the 31st December, were as follows:

| 1886. | 1887. | 1888. | 1889. | 1890. | 1891. | 1892. | 1893. |
|---|---|---|---|---|---|---|---|
| 9,459 | 15,038 | 42,777 | 9,963 | 8,900 | 9,235 | 9,241 | 12,351 tons. |

English tin was in increased demand, and although it had to follow the larger market, maintained a slightly improved margin above foreign.

The exports of tin from the United Kingdom were as follows:—

| | 1886. | 1887. | 1888. | 1889. | |
|---|---|---|---|---|---|
| English and Foreign | 19,075 | 16,893 | 24,624 | 22,926 | tons. |
| | 1891. | 1891. | 1892. | 1893. | |
| English and Foreign | 19,950 | 19,786 | 22,011 | 23,810 | ,, |

SPELTER experienced a steady fall of 20s.—i.e., from £18 7s. 6d. in January to £17 7s. 6d. in September, when the market became somewhat weaker, but rallied 7s. 6d. per ton on good buying. There was very little further change until December, when it fell to £16 12s. 6d. Remelted spelter was maintained within 10s. per ton of the value of virgin until the fall in exchange stopped all buying for China; the difference lately was fully 30s. Hard spelter dropped 20s. during the first six months; latterly it was also more severely affected by the lower Eastern exchange, and was hardly saleable at £12 15s. at the end of the year. Sheet also shared in the retrograde movement of spelter, and fell nearly £2 10s. per ton, whilst a much smaller trade was done for both import and export. The following show the imports:—

| | 1885. | 1886. | 1887. | 1888. | 1889. | |
|---|---|---|---|---|---|---|
| Spelter | 60,299 | 54,508 | 56,187 | 61,645 | 56,842 | tons |
| Zinc | 19,668 | 14,323 | 19,553 | 18,713 | 19,261 | ,, |
| | 1890. | 1891. | 1892. | 1893. | | |
| Spelter | 56,205 | 59,421 | 57,793 | 54,926 | ,, | |
| Zinc | 17,543 | 20,157 | 16,968 | 16,442 | ,, | |

LEAD was on the downward grade, not rising above £10 nor going below £9 7s. 6d. for soft pig lead until June, when £9 7s. 6d. was accepted, the lowest recorded price for pig lead. In July there was a smart advance to £10 7s. 6d. on the expectation that many of the silver mines, where lead was treated almost as a bye product, would stop working. American lead continued to be sent and the increase in value was not of long duration. Falling slowly the price for soft lead was down again to £9 7s. 6d., and improved again to £9 11s. 6d. in December. Russia took a good quantity of English pig lead, but the general export demand for manufactured sorts was very poor.

| | 1885. | 1886. | 1887. | 1888. | 1889. | |
|---|---|---|---|---|---|---|
| Imports | 108,043 | 107,878 | 114,382 | 132,911 | 145,451 | tons. |
| Exports | 38,578 | 42,365 | 44,301 | 46,616 | 52,040 | ,, |
| | 1890. | 1891. | 1892. | 1893. | | |
| Imports | 158,649 | 159,724 | 182,782 | 191,174 | tons. | |
| Exports | 55,557 | 48,233 | 56,152 | 48,935 | ,, | |

QUICKSILVER advanced from £8 5s. in January to £9 17s. 6d. in June. After a fall in August, again rose to £8 10s., but was back to £8 5s. 6d. at the close of the year.

| | 1885. | 1886. | 1887. | 1888. | 1889. | |
|---|---|---|---|---|---|---|
| Imports | 55,153 | 53,956 | 61,212 | 73,770 | 67,664 | btls. |
| Exports | 48,322 | 46,080 | 62,476 | 47,132 | 57,588 | ,, |
| | 1890. | 1891. | 1892. | 1893. | | |
| Imports | 59,479 | 62,771 | 56,990 | 52,525 | ,, | |
| Exports | 61,465 | 56,643 | 50,345 | 38,032 | ,, | |

ANTIMONY.—Regulus fell £5, and crude £3 to £7 per ton.

TIN PLATES.—Messrs. William Fallows and Co., of Liverpool, in their iron and steel report for 1893, thus review the course of the tin plate trade during last year:—The condition of the tin plate trade during the year was more unsatisfactory than ever. Notwithstanding that prices had previously fallen abnormally low, there was a further fall of about 1s. per box, and the year closed with prices at the very lowest, and the demand the smallest on record. All this may be traced to the uncertainty surrounding the American Tariff. It is confidently anticipated (notwithstanding the difficulties which surround a readjustment of the Tariff) that a very considerable reduction will be made in the duty on tin plates, and in consequence buyers hold back, and are only purchasing from hand to mouth. So soon, therefore, as anything is known as to the actual reduction in duty, and the time of its taking effect, we may anticipate some revival after the long depression which has rested on the South Wales trade. It is stated that about 200 mills are stopped either for want of orders or because the manufacturers decline to accept present prices. The following figures show that although there has been a falling off in the exports to the United States, there is a steady growth in our trade with other countries. Total exports of tin plates and sheets:—

| | 1893. | | 1892. | | 1891. |
|---|---|---|---|---|---|
| United States.....Tons. | 255,563 | ..... | 278,477 | ..... | 325,143 |
| Russia | 30,526 | ..... | 27,914 | ..... | 30,801 |
| France | 11,321 | ..... | 9,433 | ..... | 6,242 |
| Australasia | 7,754 | ..... | 7,927 | ..... | 10,497 |
| India | 6,193 | ..... | 4,507 | ..... | 4,148 |
| Brazil | 4,340 | ..... | 6,073 | ..... | 4,810 |
| Italy | 4,004 | ..... | 6,873 | ..... | 8,332 |
| Argentine Republic | 3,302 | ..... | 3,015 | ..... | 3,372 |
| Other Countries | 56,253 | ..... | 51,180 | ..... | 55,833 |
| | 379,233 | ..... | 395,449 | ..... | 448,379 |

IRON AND STEEL.—Messrs. William Fallows and Co. also review the iron and steel trade of 1893 in the following terms:—The history of iron and steel during 1893 is about as unsatisfactory as it is possible for any review to be. It is scarcely likely that such a combination of untoward and depressing events will again occur within the compass of 12 months. Not only at home, but abroad, were these disturbing elements experienced. Trade, both in the United States and the East, was restricted by the unsettled condition of silver. Australia passed through a financial crisis unparalled in its history, Italy and Greece both suffered in their national credit, and Brazil was in the throes of a revolution. At home trade was repeatedly and seriously disorganised by strikes. First it was among the cotton operatives, next among the Hull dockers, and last, but not least, there was a 16 weeks' strike among the colliers of the Midlands, accompanied and followed by a strike on a smaller scale in South Wales and Scotland. The production of pig iron was interfered with by the coal strike in the Midlands. Not only were furnaces damped down in Lincolnshire, Derbyshire, and Staffordshire, but owing to the high price of coal the Scotch ironmasters found it to their advantage to sell their coal rather than use it for smelting ironstone. The result of this was the output of 1893 was about 6¾ million tons, which is considerably under the production of former years, as will be seen from the following table, which shows the general movements of the trade for the last five years:—

| | 1893. | 1892. | 1891. | 1890. | 1889. | |
|---|---|---|---|---|---|---|
| Production of pig iron | 6,750,000 | 7,618,890 | 7,228,496 | 7,875,130 | 8,245,330 | tons |
| Total exports of iron and steel | 2,857,743 | 2,739,279 | 3,240,146 | 4,001,430 | 4,186,182 | ,, |
| Estimtd home consumpt. | 3,934,257 | 4,257,883 | 4,088,114 | 4,432,102 | 4,698,419 | ,, |
| Stock of pig iron in Great Britain Dec. 31 | 940,000 | 872,095 | 1,232,277 | 1,193,041 | 1,951,443 | ,, |
| Average price of Scotch warrants | 42s. 4d. | 41s. 10d. | 47s. 3d. | 49s. 7d. | 47s. 9d. | ,, |

The returns issued by the Cleveland Ironmasters Association give the production of that district as follows:—

| | 1893. | 1892. | 1891. | 1890. |
|---|---|---|---|---|
| Cleveland Iron.....Tons. | 1,388,043 | 957,047 | 1,493,148 | 1,539,250 |
| Hematite, Spiegel and Basic | 1,336,141 | 980,422 | 1,129,586 | 1,306,839 |
| | 2,724,184 | 1,937,469 | 2,622,732 | 2,846,089 |

The increase shown by these figures is due entirely to the absence of strikes in this district during 1893, whilst the decrease in 1892 was the result of a strike on the part of the Durham colliers which lasted for three months. The course of prices was comparatively steady, the price of No. 3 fluctuating between 33s. 9d. and 36s. 6d., closing at 35s. 6d. Foreign shipments were especially large, being 492,406 tons against 359,319 tons in 1892 and 412,216 tons in 1891. Shipments coastwise were also very satisfactory, being 421,677 tons against 273,388 tons in 1892 and 477,946 tons in 1891. Scotland again took a very large proportion (75 per cent.) of the total coastwise shipments. Stocks increased during the year, and on the 31st December the total quantity held by makers and in warrant stores amounted to 162,834 tons against 114,339 tons in 1892 and 262,916 tons in 1891. These figures do not include hematite pigs. The number of furnaces in blast on 31st December was 84 against 91 in 1892. Owing to the comparatively high price of coke the Cleveland ironmasters are understood to have had a very unprofitable year on the whole. As we have already stated the production in Scotland was seriously interfered with in consequence of the colliers' strike in England, and the output reduced to 783,867 tons against 977,213 tons in 1892. In consequence of this unsettled state of affairs and the high price of coal, many works were stopped, and the local consumption in foundries and malleable and steel works was only 548,142 tons against 771,504 tons in 1892. The consumption of these works was again very largely supplemented by supplies of both Cleveland and Cumberland iron, the total quantity imported amounting to 487,000 tons against 325,000 tons in 1892. The exports both foreign and coastwise were on a reduced scale, the figures being 292,927 tons against 392,473 tons in 1892. As might be expected stocks were reduced during the year, and the total quantity in Connal's stores and makers hands on 31st December amounted to 351,790 tons, a reduction of 61,256 tons. The changes which have taken place in Connal's stores during the last few years are remarkable, as the following figures will show:—

| | 1893. | 1892. | 1891. | 1890. | 1889. |
|---|---|---|---|---|---|
| Tons | 320,851 | 340,288 | 500,957 | 587,652 | 943,775 |

According to Messrs. Feldtmann and Co., the production of Hematite pig iron in the West Cumberland and Barrow districts was 1,133,809 tons, as against 1,078,000 in 1892, and 1,272,800 tons in 1891. This increased output does not appear to have risen from any improved demand, as the additional quantity appears nearly all to have gone into stock. The total stock in public stores and makers' hands amounted to 210,303 tons on 31st December, whilst at the same period of 1892 the stock was only 88,700 tons, and in 1891 191,400 tons. Both Foreign and Coastwise shipments were less than the preceding year, being only 271,920 tons against 338,479 tons in 1892, and 470,530 tons in 1891. Prices fluctuated but little, and ranged between 46s. 6d. and 44s. 6d. during the year. The unsatisfactory condition of the steel trade can be easily understood. The three great departments consist of rails and railway materials, plates and angles for shipbuilding, and steel blooms and bars for the manufacture of tinplates. All of these were more than usually depressed during the year and prices quite unremunerative. The outlook is still very poor. The present depressed state of shipbuilding does not encourage the hope of any early revival, although the anticipated naval expenditure may do a little in this direction. Shipbuilding, considering the depression, was on a fairly large scale in 1893, and we give the following figures, which include ships built for the English Navy:—

| | 1893. | 1891. | 1889. |
|---|---|---|---|
| Tons | 915,514 | 1,300,412 | 1,300,645 | 1,303,464 | 1,332,589 |

Until the new tariff is adjusted in America we cannot expect much activity in tin-plate bars, but this change cannot be a very long way off, although not yet in sight. There can be little doubt that all descriptions of steel must be very near the lowest, if this point has not already been touched. Steel plates are now quoted at £5 2s. 6d., and angles at £4 15s.; tin-plate bars, £3 17s. 6d. to £4 2s. 6d. Manufactured iron was quiet throughout the whole year, but experienced considerable disturbance during the colliers' strike, as it affected the production both in Staffordshire and Lancashire. Previous to the strike the prices of bars, hoops and sheets, receded about 5s. per ton, but afterwards the higher prices of coal necessitated a return to the highest prices of the year. Galvanised sheets fell 10s. during the year closing at the lowest. It is to be feared that during the stoppage of the works, a considerable number of orders were placed with Continental makers, and this may account for the reduced shipments of manufactured iron, as shown by the following figures:—

| | 1893. Tons. | 1892. Tons. | 1891. Tons. | 1883. Tons. |
|---|---|---|---|---|
| Bar, Angle, Bolt and Rod | 146,931 | 173,414 | 217,121 | 227,909 |
| Hoops, Sheet and Plates (including Galvanised) | 306,326 | 237,236 | 324,367 | 348,324 |
| Wire of Iron and Steel | 37,137 | 47,350 | 67,516 | 62,784 |

* These reviews were unavoidably crowded out last week.

THE MINING STATISTICS OF THE UNITED KINGDOM.—The Home Secretary has appointed two Departmental Committees to consider the form in which the mining statistics of the United Kingdom and the statistics relating to factories and workshops are at present issued by the Home Office, and to submit to him any recommendations for their improvement. The first committee is to consist of Dr. Hunter, M.P., Dr. Le Neve Foster and Mr. W. B. Scott, H.M. Mines Inspectors, and Mr. J. B. Jordan, of the Home Office. The second committee consists of Mr. E. Gould, H.M. Superintending Inspector of Factories, Dr. Whitelegge, Mr. Jasper Redgrave H.M. Inspector of Factories (who acts as secretary), and Mr. J. G. Legge, of the Home Office.

# PROVINCIAL SHARE MARKETS.

### THE CORNISH MINE SHARE MARKET.

MR. SAMUEL JOHN DAVEY, Dealer in Cornish Mine Shares, Redruth, Cornwall, reports under date of January 18 (4 o'clock), as follows:—Our market has been very quiet all this week with prices generally weaker, but to-day market is firmer. Following are quotations:—Blue Hills, ⅛ to ¼; Carn Brea, 12½ to 13; Dolcoath, 68 to 70; East Pool, 11¼ to 12; Killifreth, £3 8s. to £3 8s.; Phœnix, ¼ to ⅜; South Condurrow, ⅜ to ½; South Crofty, 1½ to 2; Tincroft, 11¼ to 11⅜; West Frances, 1¾ to 1⅞; West Kitty, 7¼ to 8⅛; Wheal Agar, 2¾ to 3⅛; Wheal Basset, 1⅞ to 2⅛; Wheal Grenville, 13⅛ to 14; Wheal Kitty (St. Agnes), ⅝ to ¾; Polberro, 12s. to 14s.

MR. MICHAEL WILLIAMS BAWDEN, Mining and Assaying Offices, Liskeard Cornwall, writes (January 18) as follows:—The continued decline on the tin standard throughout the week, and another reduction of 27s. per ton on the average price of ore sold on Tuesday, has further depreciated all shares; prices mostly nominal, and business has been confined to the settlement. Closing prices:—Blue Hills, 2s. to 2s. 6d.; Carn Brea, 12¾ to 13¼; Cook's Kitchen, 1 to 1¼; Dolcoath, 68½ to 69; Devon Consols, 19s. to 20s.; East Pool, 11¼ to 11½; Killifreth, 3⅛ to 3¼; Levant, 5¾ to 6; Phœnix United Mines, ⅜ to ⅝; Prince of Wales, ⅛ to ¼; Polberro, ⅛ to ⅜; South Condurrow, ⅜ to ½; South Crofty, 1¾ to 1⅞; South Frances, ⅛ to ¼; Tincroft, 11⅛ to 11⅜; West Frances, 1¾ to 1⅞; West Kitty, x.d., 7¼ to 8; Wheal Agar, 2¾ to 3; Wheal Basset, 2¼ to 2⅜; Wheal Grenville, 13⅜ to 14; Wheal Kitty, ½ to ⅝.

Messrs. ABBOTT AND WICKETT, stock and share brokers, and mining share dealers, Redruth, write under date of Thursday, January 18th (four o'clock) as follows:—The market has been flat until to-day, but a rise of 5s. in tin, coupled with a belief that the bottom has been reached has caused a reaction. The market closes with a healthier appearance. Quotations herewith, but very few shares on offer:—Carn Brea, 12¾ to 13¼; Dolcoath, 69 to 70; East Pool, 11 to 11¼; Killifreth, 3¼ to 3½; Phœnix, ⅜ to ⅝; Polberro, ⅛ to ⅜; South Condurrow, ⅜ to ½; South Crofty, 1¾ to 2; Tincroft, 11½ to 12; West Frances, 1¾ to 1⅞; West Kitty, 7⅞ to 8¼; Wheal Agar, 2¾ to 3¼; Wheal Basset, 2 to 2⅛; Wheal Friendly, ⅛ to ¼; Wheal Grenville, 13½ to 14; Wheal Kitty, ½ to ¾. Tin, 71¾.

### MANCHESTER.

Messrs. JOSEPH R. and W. P. BAINES, stock and share brokers, Queen's Chambers, 7, Market-street, write January 18, 1894, (noon):—An improved tone has been manifest in most markets during the first account of the year, and the past week has witnessed a fairly general advance in values throughout the several departments of rails, notwithstanding the distribution announcement of the M. S. and L. Railway leaving all preferences after the 1865 issue without interest, the prices of their deferred stocks and home rails generally are higher, and in some instances distinctly so. Brighton, A, are prominent amongst the advances, as although their dividend announcement gives only 5¾ per cent. against 7 last year, it was rather better than had been anticipated, hence the rise. Berwicks, too, are decidedly higher (2¼), and there are several others where the rise amounts to more than 1 per cent. The exceptions are found in Great Northern A and Great Eastern which are 2 and 1 lower respectively. Fairly encouraging traffic receipts in home rails have helped the stronger tendency. In Canadians, Pacifics are $1½ down, but Trunk issues after small fluctuations finish with a few gains of about ¼ each. Americans, for the most part, have moved within somewhat narrow limits, but Louisvilles have oscillated rather wider. On balances the changes are not very numerous, nor indeed of much moment save for the following, viz.:—Higher: Atchison Ordinary $¾ to $⅞, Milwaukies $1½, Eries $⅝ to $¾, Readings $⅝, and Union Pacifics $1.—Lower: Norfolk Preference $1. The remaining alterations are in very small fractions of a dollar. Mexican rails show gain of 2 on First Preference and ¼ on Ordinary, whilst Second Preference are without change. Consols have mended ⅛ on the week. The only changes marked here in colonial bonds, &c., are advances of ⅛ each in Queensland Inscribed and Victoria Inscribed. In home corporation stocks, &c., Birmingham Three and Three and a-half per Cent., Bradford Four per Cent., and Newcastle Three and a-half per Cent. are all ½ higher, these being all the changes there are to record. Foreigners provide very few alterations and whilst numerically the balance is slightly on the lower side, only Argentine Five per Cent. which are 1 and Italian Rentes 1¼ down show change worth naming. The miscellaneous sections of the market, whilst being far from brisk, excepting in Ship Canal issues, show prices generally better where altered.

BANKS have been only very moderately dealt in and what few changes there are made in quotations are few and at the same time infinitesimal in amount.

INSURANCE.—Whilst very few transactions have been marked, prices are better in a good number of cases, with very little on the adverse side to set against them.

COAL, IRON, &c.—Besides the following notable advances—viz., Cammell's 4½, Parkgates 2, Staveley A 3½, and ditto C 3 to 4. There are several others quoted better, and there are no declines to notice. A few dealings on Friday last in Ebbw Vales and a desultory business in Bolckow £12 and £20 paid is all that has been going on herein during past week.

COTTON SPINNING, &c.—With very little business publicly doing, prices keep steady, and here and there where last stocktaking was favourable some advance on current fixtures has to be given to bring about business.

Mines are better in all cases where altered, but the alterations are small in any case.

MISCELLANEOUS.—Ship Canal shares have again been the feature of the week here. Prices were still forced down hill on Monday (carrying over day) 3½ was registered for ordinary, and on Tuesday they were further pressed down to 3¼. The lowest price done at in Preference was on Monday, viz. 5. Wednesday morning, however, they became strong, and prices rapidly advanced, the Ordinary going to 3 11/16 to 4, and Preference to 5⅜ to 5½. With some little fluctuations they have retained most of the recovery, Ordinary finishing to-night 3 13/16 to 3 15/16, and Preference 5 13/16 to 5¾. Beyond Ship Canals little business is reported, but some fairly good advances in prices are to be noted, viz.:—Higher: Manchester Carriage and Trams A, 1; ditto B ¼ to ⅜, and ditto C, ¾; Liverpool Gas A, 2; Allsopps, 9; and Guinness, 5. Amongst declines, which are few, there are none of any moment whatever, except in Canals, which on the week are ⅜ to 9/16 lower on the Ordinary, and 1/16 on Preference.

LATER (4 P.M.).—Home rails better on the South Eastern and Great Eastern dividends. Americans and Canadians both stronger. Coal shares, notably those of the South Wales district, in demand. Ship Canals firmer, too.

### SCOTCH MINING AND INDUSTRIAL COMPANIES SHARE MARKETS.

STIRLING.—Mr. J. GRANT MACLEAN, stockbroker and ironbroker (January 18), writes:—During the past week the markets have been quiet partly due to the intervening fortnightly settlement. Carrying over to new account January 31 was, however, arranged on very easy terms for purchasers. The expected improvement of trade has not yet assumed a definite shape, but there is nothing to discourage the more hopeful prospects, while it is distinctly encouraging that the colliers will likely remain at work. The money market is also very easy, and investors who go into industrial concerns at present depressed prices will likely realise large profits provided 1894 turns out a better year.

In shares of coal, iron, and steel companies prices are generally higher on the prospects of better trade. It is announced the Round Oak Coal, Iron, and Steel Company is to be reconstructed, Bolckow Vaughan are at 10¾, Ebbw Vale 8¾, Marbella 5s., Merry and Cuninghame Preference 10½, Niddrie and Benhar 45s., Rhymney Iron, 32s. 6d., Stewart and Clydesdale 5⅛ (been 7⅛), Steel Company of Scotland 67s., and Wilson's and Clyde coal 8¾.

In shares of copper concerns there has been little business doing, owing to the dull state of the market for the metal. Tharsis have touched 96s. 9d., and Tinto 14¼, but Mason are higher at 47s. 6d., Arizona are at 8s. 3d.

There is little doing in shares of home mines, Carn Brea are at 13¾, Great Laxey 57s. 6d. to 62s. 6d., Leadhills 20s., and Wheal Kitty 3⅛.

In shares of gold and silver mines prices are steady. Montana declined to 6s. 3d., but have recovered to 7s. 6d. The Frontino company's profit for November is announced at £1671 and that of May Consolidated at £2785. Sheba are unaltered though a telegram has been received announcing a rich strike at the mine. African Gold Recovery remain about 28s.; last month 44,200 ounces were recovered by their process at the Randt. Pahang Corporation Preference shares offered. Australasian Recovery are at 8s.; Australasian Mining, 1s. 6d. to 2s.; American Belle, 2s.; Balaghat, 8s.; British South Africa Chartered, 23s. 6d.; Balkis Land, 1s. 6d. to 2s.; Broken Hill Proprietary, 55s.; Bakers Creek, 26s.; Cassel, 19s. 6d.; Champion Reef, 63s. 6d.; Consolidated Gold Fields of South Africa, 24s.; Caratal, 7d.; Day Dawn P.C., 5s. 9d.; Golds Fields of Mysore, 19s. Lisbon Berlyn, 2s. 6d.; La Plata, 7¼d.; Onregum, 66s. 3d.; Pahang Exploration, 9d.; St. John del Rey, 21s. 6d. and West Argentine 2s. to 2s. 6d.

In shares of miscellaneous companies there has not been much business doing. Oil companies shares steady. Broxburn are at 8; Pumpherston 6 15/16, and Young's 23s. 6d. Lawes' Chemical are at 6¾; Nobel's Explosives, 13¾; and Roburite Explosives, 31s. 3d.

### EDINBURGH.

Messrs. THOMAS MILLER and SONS, stock and share brokers, 69, Hanover-street Edinburgh, report as follows under date of January 18:—North British and Caledonian Railway Deferred Stocks have been in demand at improved prices; the former has risen 1 5/16, and the latter 1 1/16. North Eastern have improved 2⅛, Great Western ⅝, Brighton Deferred 2⅛, South Eastern Deferred ⅛. The announcement of the small dividend on Great Eastern has been well received, and the stock has advanced 3/16. Great Northern Deferred has receded 1⅛. Glasgow and South Western 1⅝. In banks British Linen stock has risen from 280 to 281½, Clydesdale from 20 1/16 to 20⅝, while Commercial have declined from 67 to 66½. In insurance shares Caledonian have advanced from 28⅝ to 30, Liverpool and London and Globe from 41¾ to 42, Scottish Accident from 34s. to 35s., Standard Life from 56¾ to 57, Northern from 59 to 59¾. North British and Mercantile have receded from 33 1/16 to 33, English and Scottish Law Life from 11⅛ to 11 1/16. Scottish Trust and Loan of Ceylon shares have receded from 65s. 9d. to 64s. 6d. Cowdenbeath Coal have declined from 13½ to 13¼. Niddrie and Benhar have advanced from 41s. 9d. to 45s., Steels from 53s. 3d. to 56s. 3d. Mason and Barry have risen from 41s. 3d. to 47s. 6d. Dalmeny Oil have risen from 9¾ cum to 9¾ ex dividend of 14s. per share. Swan Land and Cattle have declined from 11s. to 10s. Assets shares have risen from 42s. 9d. to 47s. 3d. Coats have risen 5s., and Distillers have lost 7s. 6d.

THE *Transvaal Argus* says that the May Deep Mine "is undoubtedly a good one, and will come to the front yet, and can be economically worked."

# TIN TICKETING.

A TICKETING for tin ores was held at Redruth, on Tuesday, with the following result:—

VALUES OF ORES SOLD BY EACH MINE.

| | Tons cwts. | Per ton. | Value. |
|---|---|---|---|
| Carn Brea No. 1 | 16 0 | £40 2 6 | £632 0 0 |
| do No. 1a | 16 0 | 40 7 6 | 636 0 0 |
| do No. 1b | 16 0 | 40 10 0 | 642 0 0 |
| do No. 2 | 1 10 | 31 15 0 | 45 18 9 |
| Dolcoath No. 1 | 15 0 | 44 15 0 | 650 12 6 |
| do No. 1a | 15 0 | 44 15 0 | 656 5 0 |
| do No. 1b | 15 0 | 44 17 6 | 656 5 0 |
| Tincroft | 16 0 | 41 12 6 | 644 0 0 |
| do | 15 0 | 41 17 6 | 607 10 0 |
| do | 3 0 | 38 12 6 | 72 7 6 |
| South Frances Utd. No. 1 | 10 0 | 43 7 6 | 418 15 0 |
| do No. 1a | 10 0 | 42 17 6 | 423 15 0 |
| East Pool No. 1 | 15 0 | 41 2 6 | 596 5 0 |
| do No. 2 | 1 10 | 20 0 0 | 27 0 0 |
| Killifreth | 14 0 | 45 10 0 | 623 0 0 |
| Phœnix United | 14 0 | 43 12 6 | 603 15 0 |
| West Kitty | 10 0 | 45 12 0 | 447 10 0 |
| Wheal Agar | 9 0 | — | 352 2 6 |
| South Condurrow | 7 0 | 45 7 6 | 313 5 0 |
| | 219 0 | | £9,048 6 |

AVERAGE PRICES PER TON.

| | | | |
|---|---|---|---|
| Dec. 5 1893 | £44 10 3 | Jan. 2 1894 | £42 13 3 |
| Dec. 19 | 43 11 6 | Jan. 16 | 41 6 4 |

MAP SHOWING LINES OF EQUAL MAGNETIC DECLINATION.—In accordance with their custom, the proprietors of the *Colliery Guardian* have issued to their readers a map showing lines of equal magnetic declination or variation of the compass corrected to the beginning of the new year—that is, to January 1, 1894. The lines are shown in red on the map, and depend, as in several past years, on the magnetic survey of the kingdom undertaken by Professors Rucker and Thorpe, and published in the *Philosophical Transactions* for the year 1890. The idea of bringing out such a map is one upon which our contemporary is to be congratulated, as also are those engaged in the management of mines, who will have in this convenient and handy form the valuable information it is the object of the map to supply. Messrs. W. and A. K. Johnston, whose names are to be seen below some of the best of the many maps issuing from the Press, have engraved and printed this one.

MANCHESTER GEOLOGICAL SOCIETY.—At the ordinary meeting of the members of this society held at the Mining School at Wigan last Friday, Mr. W. Saint, H.M. Inspector of Mines in the chair, Mr. Charles H. Higson read a paper on "The Walker Patent Indestructible Fan and Engines as erected at the Park Collieries, Garswood," in which he gave details as to their construction, arrangement, and efficiency, together with a comparison of fan with furnace ventilation.


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# COMPANIES AND LEGAL ANNOUNCEMENTS.

*** Advertisements are inserted in this column at the rate of 9d. per line with a minimum charge of 7s. 6d.

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The London Office of the Mozambique Company, Broad Street House, Old Broad Street, E.C.

Dr. MAGIN, Ph.D., M.E., National Bank Buildings, Johannesburg; and

C. J. ALFORD, Mining Commissioner of the Mozambique Company, Umtali, East Africa.

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| Steamers. | London. | Southampton. |
|---|---|---|
| ‡Garth Castle | Jan. 19 | — |
| †Grantully Castle | Jan. 23 | Jan. 27 |
| *Doune Castle | Feb. 2 | — |
| †Drummond Castle | Feb. 9 | Feb. 10 |

* Via Grand Canary for Madagascar and Mauritius.
† Via Madeira. ‡ Via Grand Canary.

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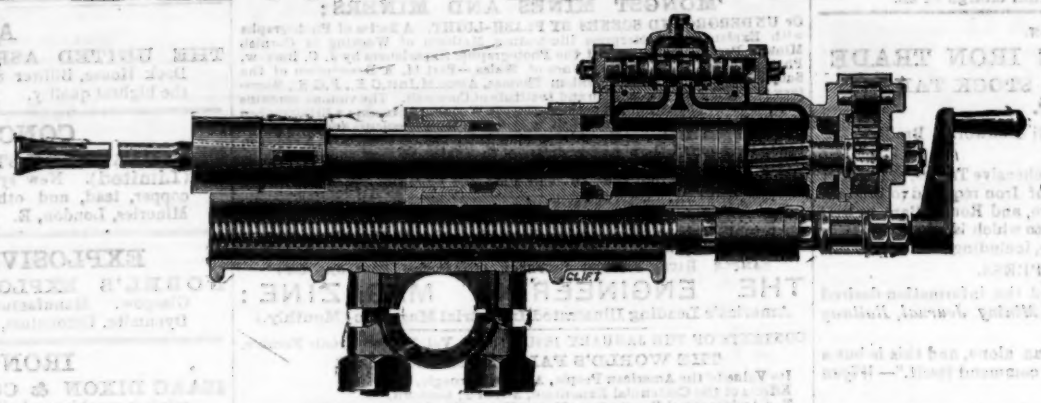

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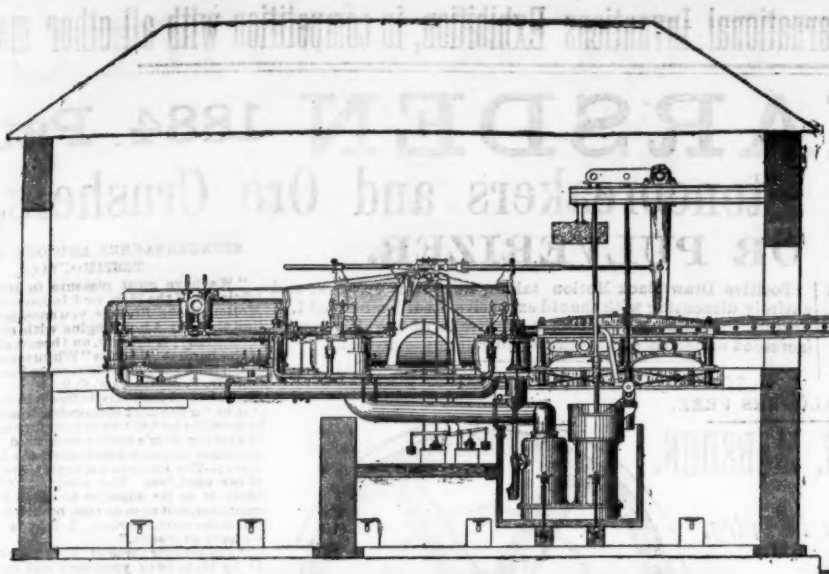

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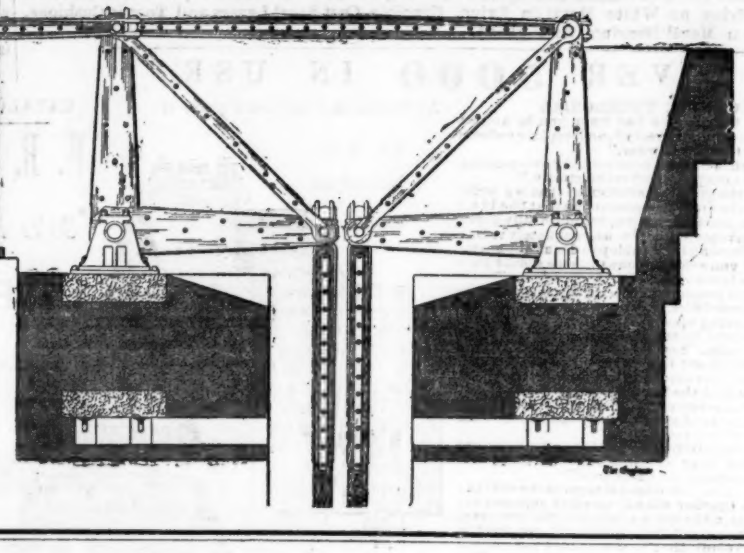

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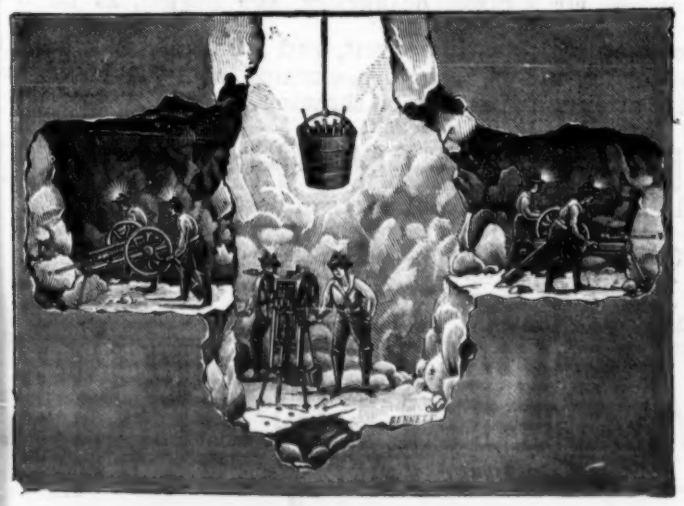

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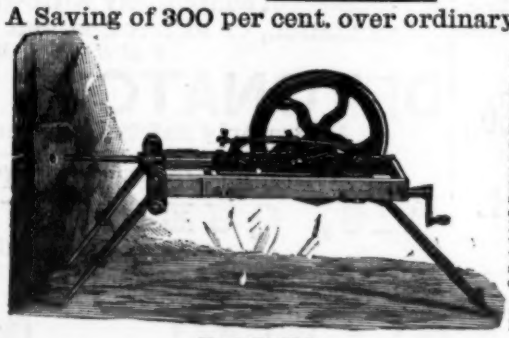

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It is perfectly automatic, and bores holes from ⅜ to 2¼ inches diameter at the rate of 1 to 2 ins. per minute in hard rock. It will work equally well in any direction, or on any uneven surface. No skilled labour required to run it. No expensive repairs. Made in 2 sizes, and can be worked by electric motor if desired. Hundreds of them are at work in all parts of the world in mines, quarries, and all kinds of rock-excavating.

It is the only effective and durable Hand Power Rock Drill ever made.

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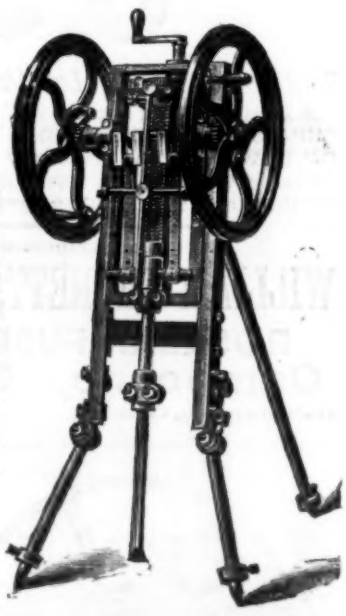

DRILL No. 2.

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**THE IRON AND COAL TRADES REVIEW:**

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**The Bulletin of the British Iron Trade Association.**

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**Awarded the ONLY Gold Medal for Stonebreaker at the International Inventions Exhibition, in competition with all other makes.**

# THE BLAKE-MARSDEN 1884 Patent

## Lever Hand-Hammer Action Stonebreakers and Ore Crushers,

## NEW PATENT FINE CRUSHER OR PULVERIZER.

Fitted with Patent Reversible Cubing and Crushing Jaws in Five Sections, and with Surfaced Rocks, requiring no White Metal in fixing. Crucible Cast Steel Levers and Toggle Cushions, Brass or Gun Metal Bearings throughout.

Positive Draw Back Motion taking no power to work, and entirely dispensing with the old expensive Steel Embedded I.B. Spring. The motion or length of Stroke of the Jaw can be increased or decreased at pleasure, to suit any material.

**OVER 5000 IN USE.**

**70 First-Class Gold and Silver Medals.**

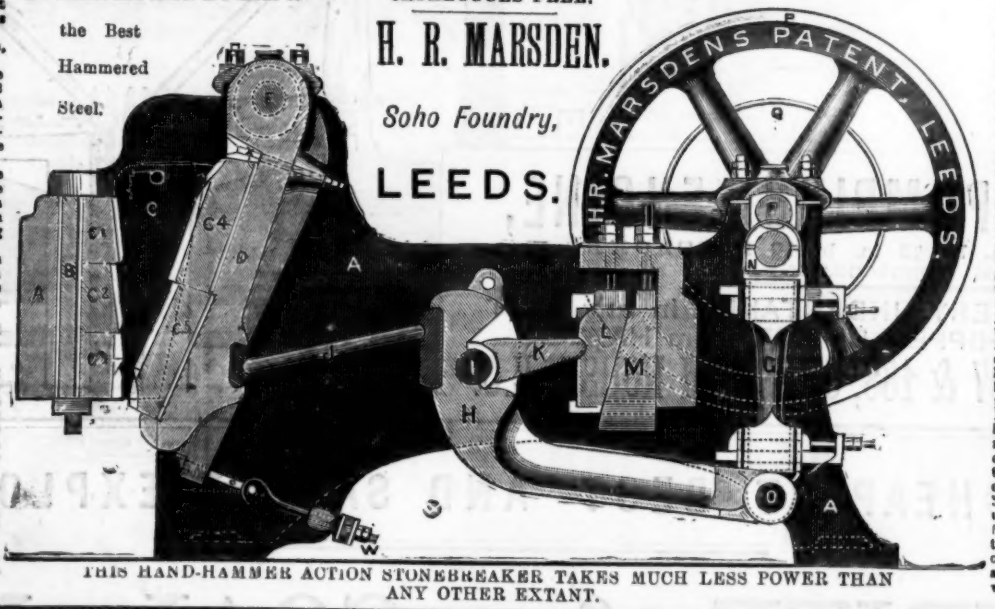
CATALOGUES FREE.

All Shafts and Axles are made of the Best Hammered Steel.

**H. R. MARSDEN.**

*Soho Foundry,*

**LEEDS.**




THIS HAND-HAMMER ACTION STONEBREAKER TAKES MUCH LESS POWER THAN ANY OTHER EXTANT.

PULVERIZER TESTIMONIAL

"The Fine Crusher we had from you in August last is an excellent pulverizer, and rapidly reduces hard material to a fine powder."

"The Pulverizer has now been working two months, and answers its purpose most satisfactorily."

"It is with the greatest satisfaction that we write these few lines in order to acquaint you that the 12×3 Pulverizer you provided us with, has quite fully given the results you represented to us, completely reducing our material to an impalpable powder at one operation. Should you refer any one to us we should have much pleasure in recommending the machine."

"I have great pleasure in bearing testimony to the merits and capabilities of your patent combined fine crusher and sieving apparatus. I have tried it on a variety of ores and minerals, and it pulverizes them with equal success. You can put in a small paving stone and bring it out like flour."

"In reply to your favour, I have much pleasure in informing you that the 12×3 Pulverizer we had from you is giving us every satisfaction. The material we are operating on is an exceptionally hard one. I am well satisfied with its working."

"Our experience is that the motion and mechanical arrangements of your machine are the best for pulverizing that we have ever met with"

"The reports from our mines as regards the working of your Fine Crusher (20×5) recently supplied are very favourable, although we cannot quote you exact figures. On being got into position it was tried by hand, with the result that it made short work of the biggest pieces of ore we put into the hopper. You might s. y how long you would take to deliver another of the same size."

"As I once before stated, your machine is a perfect pulverizer."

"I am sure the machine will be a success, and a great one, and there is any amount of demand for such a machine. We can work it with 20 lbs. of steam, and our engine, which is a 12-h.p., plays with the work, in fact we run the Stonebreaker and the Pulverizer both together with 35 lbs."

STONEBREAKERS AND ORE CRUSHERS. TESTIMONIALS.

"We have great pleasure in testifying to the efficiency of the 15 in. by 8 in Lever Hand Hammer Motion Stone Breaker you supplied us with. We find that our 4 h-p. Engine with ease drives it 220 revolutions per minute, and breaks six ton per hour of the hardest "Diorite" Whinstone: the sample is much before any hand-broken we have ever got done. Our Mr. P. J. GRAHAM, C.E., who was Surveyor of Highways for ten years, before joining our firm, says It is by far the most economical machine he ever had to do with; he had two of your former make, and two of another firm's make; compared with these four machines your new patent gives the following advantages:—The horse-power required to drive is exactly 40 per cent. less. The sample of the broken macadam is so far superior to that broken by other machines, and even to that broken by hand that we can make no comparison. I is by far the best sample we have ever seen."

"I now order three of your Stone Crushers, size 15 by 10, to be of your very best construction, and to include two extra sets of Jaws and Cheeks for each. The last two 24×13 machines you sent me, which are at work in this colony, are doing very well. You will soon find that the railway contractors will adopt your machines in preference to the colonial ones—two of which I have. I know other contractors have had as many as nine of them, which have not given very good satisfaction. Once they know of yours thoroughly, I believe you will do a good trade with the colonies. For reference of the high character of your constructions you can refer to me as having used them with the very best results, both in New Zealand and this colony, and much prefer them to the colonial article, both in point of construction and less liability to go out of order. The material we are crushing is very hard blue stone, for railway ballast purposes. Push on with the order as quickly as possible. I do not think it necessary to have any engineering inspection. I have brought your machines prominently under the notice of all large contractors in this colony, likewise the Government. Many of the contractors have spoken to me in reference to their capabilities, and I could only tell them that they are by far and away the best and most economical I ever used. The very fact of me having purchased eleven from you at various intervals and various sizes, and two above 12 years ago, and having tried all the other makers is sufficient guarantee of the capabilities and the working of your machines. Yours in every way surpass all others."

# BENNETT'S

"CROWN BRAND"

# FUSE.

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A Distinguishing Feature in these Goods is THREE SEPARATE CENTRE THREADS IN THE COLUMN OF POWDER. The make may always be recognised by these Threads, and users are cautioned to look for them and see that they have the Genuine Article.

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**WILLIAM BENNETT, SONS, & Co.,**

**ROSKEAR FUSE WORKS,**

**Camborne, Cornwall.**

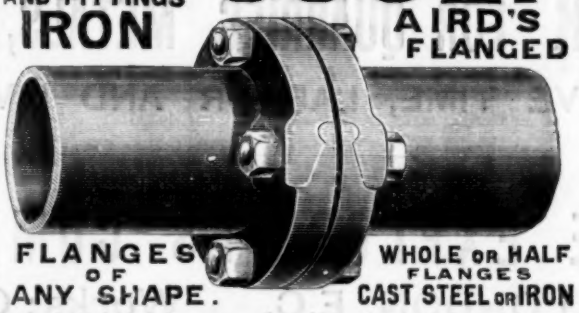
TELEGRAMS: FUSE, CAMBORNE.

SCREWED AND SOCKETED TUBES AND FITTINGS IRON

# JOSEPH AIRD

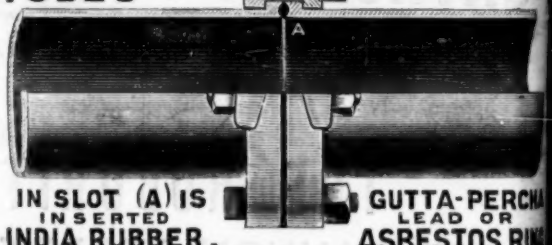
AIRD'S PATENT FLANGED TUBES

ALL SIZES PLAIN OR GALVANIZED STEEL.



FLANGES OF ANY SHAPE.

WHOLE OR HALF FLANGES CAST STEEL OR IRON




IN SLOT (A) IS INSERTED INDIA RUBBER,

GUTTA-PERCHA LEAD OR ASBESTOS RING

**TUBE WORKS: GREAT-BRIDGE, STAFFORDSHIRE**

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IS RECOMMENDED TO CONTRACTORS, MINERS, PIT SINKERS, QUARRYMEN, AND OTHERS, AS BEING THE SAFEST OF ALL EXPLOSIVES.

**TONITE is a most efficient and economical blasting agent, and is largely in demand. It does not contain any Nitro-glycerine, and is, therefore, exempt from the dangers of exudation, or of freezing and its attendant process of thawing.**

*THE COMPANY MANUFACTURE*

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Also supply Safety Fuse and Electric Firing Appliances of best description.

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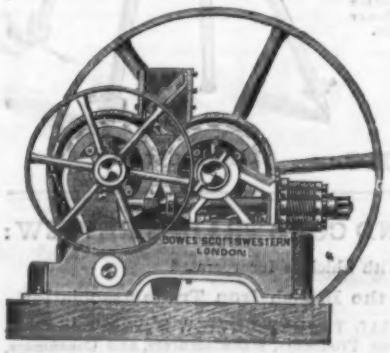


# MINING MACHINERY.

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CRUSHING ROLLS.
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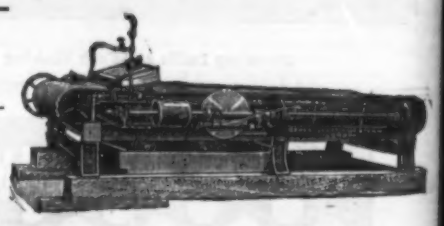
AMALGAM RETORTS, &c.

ENGINES SINGLE & COMPOUND BOILERS OF ALL KINDS, TURBINES, &c.



SOLE LICENSEES AND MANUFACTURERS OF

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FOR FINE CRUSHING.

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